

**Draft Environmental Impact Statement/
Environmental Impact Report
National Park Service/California State Lands Commission
Golden Gate National Recreation Area/Point Reyes National Seashore
Marin County**

Since the early 1900s, levees constructed at the southern end of Tomales Bay for roads and dairy farms have served to hydrologically disconnect Lagunitas Creek and its tributaries from their floodplains. As a result, wetland conditions within the Waldo Giacomini Ranch and Olema Marsh (Project Area) have been degraded, and hydrologic and ecological functionality of what was once of the largest integrated tidal marsh complexes in Tomales Bay has been substantially reduced. Natural wetlands provide many important functions for humans and wildlife, including floodwater retention, water quality improvement, wildlife habitat, and recreational opportunities. Because two-thirds of the Bay's freshwater inflow passes through the Project Area, these wetlands may have once played an integral role in maintaining health of Tomales Bay, which has deteriorated over the last century because of excessive sedimentation, water and sediment quality problems, non-native species invasions, and other issues.

In 2000, the Park Service acquired the Waldo Giacomini Ranch for the purpose of wetland restoration using a combination of Congressional appropriations and mitigation monies from the California Department of Transportation (CalTrans). Because the Project Area is in the northern district of the Golden Gate National Recreation Area (GGNRA), it is managed by Point Reyes National Seashore (Seashore).

This *Draft Environmental Impact Statement/Environmental Impact Report* (DEIS/EIR) evaluates four alternatives for restoring wetlands and wetland functionality and incorporating public access opportunities that do not impact wetland function, as well as the No Action Alternative (e.g. closure of the dairy and discontinuation of intensive agricultural management). The primary purpose and objectives of the proposed project include: restoring hydrologic and ecological processes and functions in a significant portion of the Project Area; emphasizing actions that would benefit the health of the entire Tomales Bay watershed and not just the Project Area; and incorporating opportunities for experiencing and enjoying the restored wetlands that do not conflict with the project's purpose. Alternative C is the lead agencies' preferred alternative, because it best meets the purpose of restoring wetlands while also providing opportunities for public access that answer some of the local community's needs. Alternative D would be the environmentally preferred alternative, because it provides the most restoration, although it also incorporates the least public access opportunities relative to the other action alternatives.

The National Park Service and CSLC will accept comments on the DEIS/EIR from the public for 60 days from on which the Environmental Protection Agency publishes the Notice of Availability in the Federal Register. Our practice is to make comments available for public review. If you wish to have your name, address, phone number, or email address withheld from the public, please request this prominently at the beginning of your comments. Please include a rationale for your personal information being withheld from public review that demonstrates disclosure would constitute a clearly unwarranted invasion of privacy. Unsupported assertions will not meet this burden. In the absence of exceptional, documentable circumstances, this information will be released. Submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will always be made available for public review in their entirety.

Address written comments to: ATTN: Superintendent, Giacomini Wetland Restoration Project DEIS/EIR, Point Reyes National Seashore, 1 Bear Valley Road, Point Reyes Station, CA 94956. You may email your comments to PORE_Planning@nps.gov. Please reference the Giacomini Wetland Restoration Project in the subject line.

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Executive Summary

Introduction

This Draft *Environmental Impact Statement/Environmental Impact Report (DEIS/EIR)* has been prepared to assist the public, the National Park Service (Park Service), and the California State Lands Commission (CSLC) in formulating a wetlands restoration plan for the Waldo Giacomini Ranch (Giacomini Ranch) and Olema Marsh. Together, the 550-acre Giacomini Ranch and 63-acre Olema Marsh represent the Project Area for the Giacomini Wetland Restoration Project (proposed project).

Since early 1900s, levees constructed at the southern end of Tomales Bay for roads and dairy farms have served to hydrologically disconnect Lagunitas Creek and its tributaries from their floodplains. Infrastructure such as levees, tidegates, and culverts, as well as intensive agricultural management, has degraded the condition of these wetlands and substantially reduced hydrologic and ecological functionality of what was once of the largest integrated tidal marsh complexes in Tomales Bay. Hydrologically connected, natural wetlands provide many important functions and services for humans and wildlife, including floodwater retention, water quality improvement, wildlife habitat and food supply, recreational opportunities, and support of mariculture and fisheries industries. As two-thirds of Tomales Bay's freshwater inflow passes through the Project Area, these wetlands probably once played an integral role in maintaining health of Tomales Bay, which has deteriorated over the last century because of excessive sedimentation, water and sediment quality problems, non-native species invasions, and other issues.

The proposed project would restore natural hydrologic processes to a significant portion of the Project Area, thereby promoting restoration of ecological processes and functions. By removing levees, tidegates, and culverts, floodwaters of Lagunitas and other Project Area creeks that carry sediment, nutrients, and other pollutants would be able to flood onto historic floodplains to be filtered and transformed by the restored wetlands. This hydrologic reconnection would be expected to decrease flooding within the local community and improve water quality within the Project Area and Tomales Bay. In addition, it would increase habitat and food resources for wildlife within the watershed and would provide opportunities for public enjoyment and education through inclusion of public access trails, viewing overlooks and platforms, and interpretative exhibits.

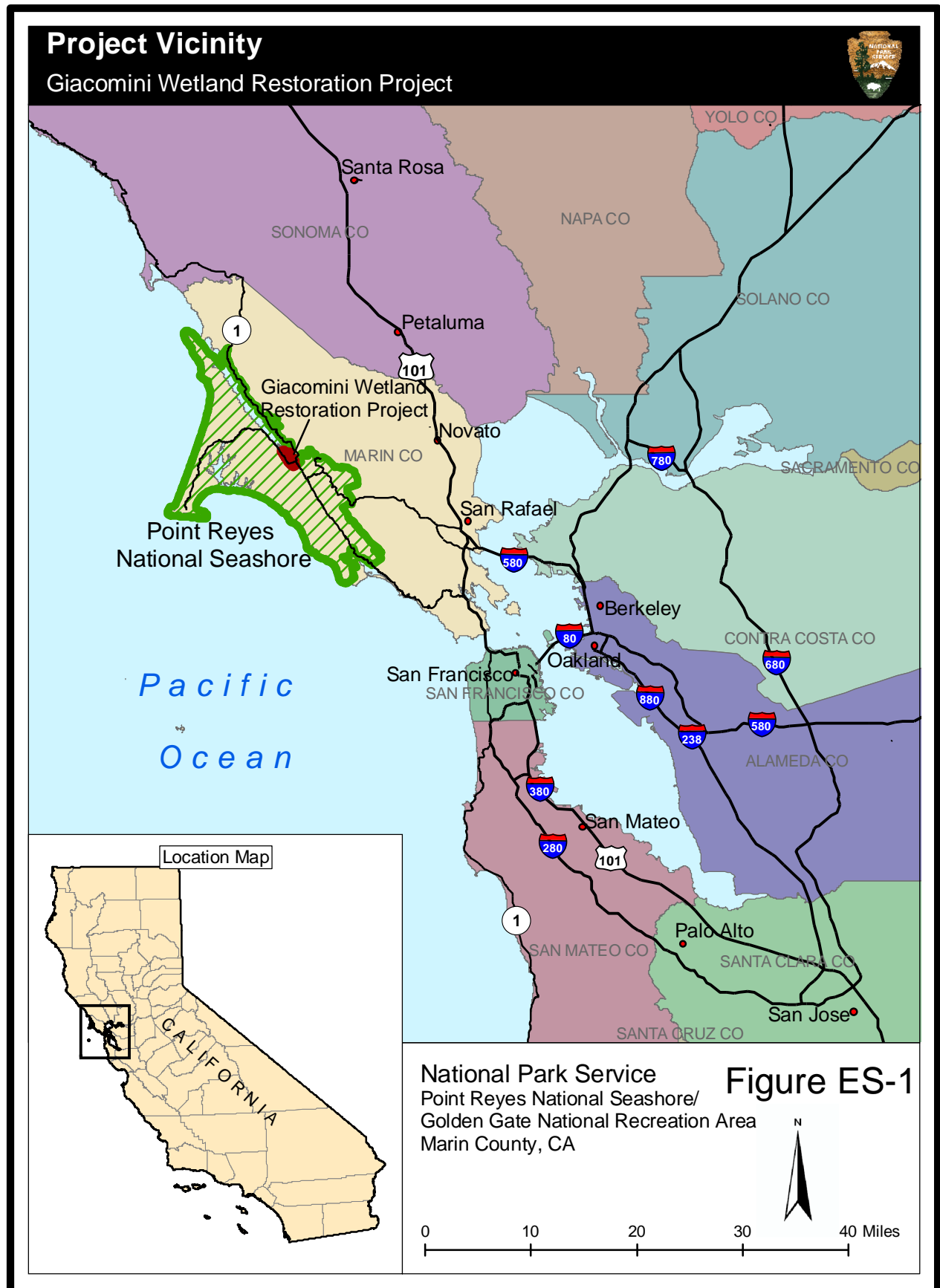


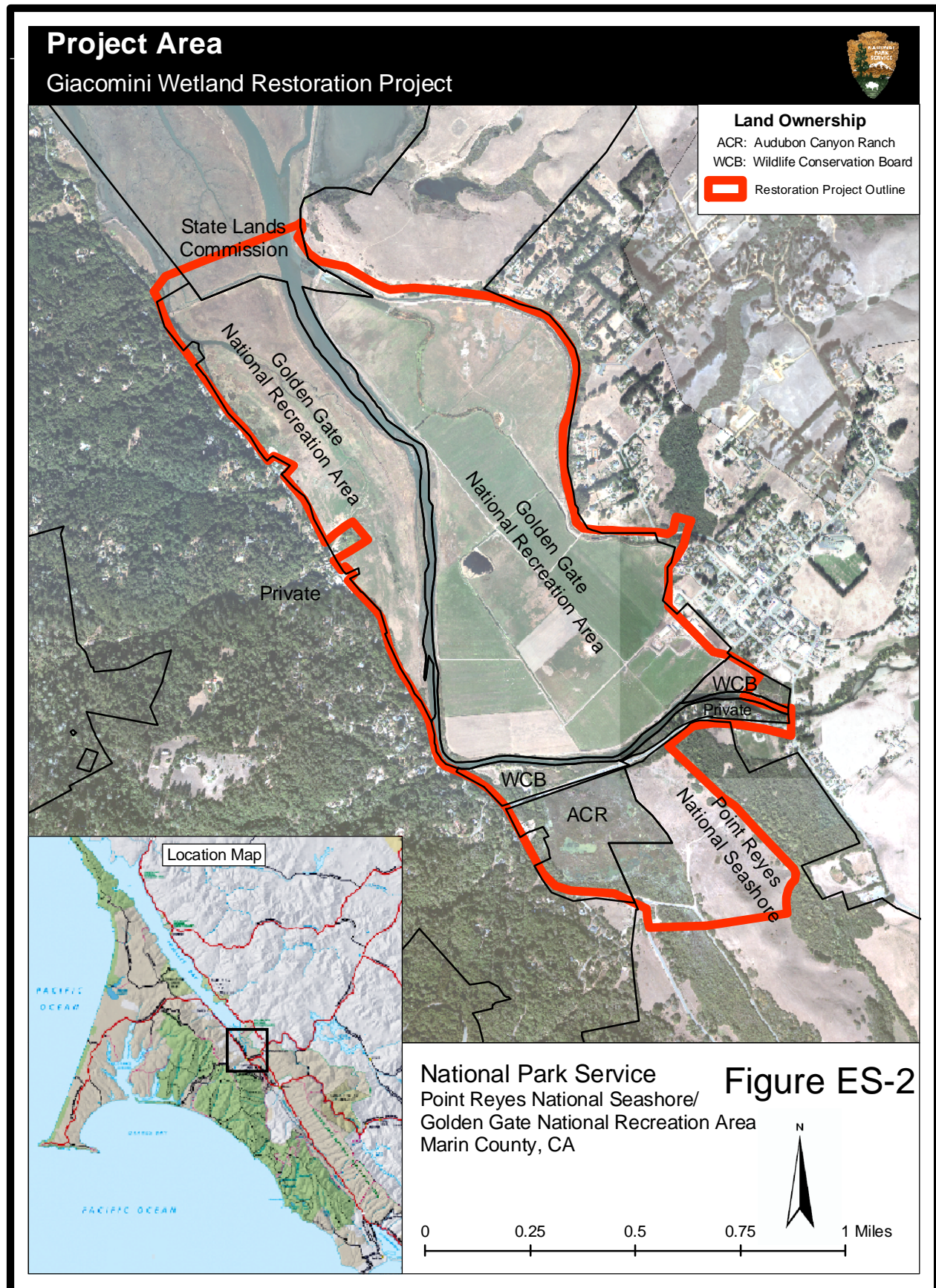
The Park Service is acting as the lead NEPA agency and principal project proponent and manager. The Park Service owns the Giacomini Ranch (ES Figures 1 and 2). A portion of Lagunitas Creek and some tidal lands are owned and managed by the CSLC, who is the lead agency under the California Environmental Quality Act (CEQA). The Park Service also owns a small portion of Olema Marsh; the other portion is owned by the non-profit organization, Audubon Canyon Ranch (ACR), which is actively working with the Park Service and CSLC on the proposed project.

Need for Action

More Than 50 Percent of Wetlands in Tomales Bay Lost or Degraded

Excessive sedimentation in the Tomales Bay watershed during the late 1800s from logging and agricultural development resulted in large-scale conversion of open water and mudflats to vegetated marsh, nearly doubling vegetated wetland acreage in the bay. However, many of Tomales Bay's tidal marshes were subsequently filled or hydrologically disconnected from creeks and the bay by construction of levees or earthen berms for roads, railroads, livestock ponds, and duck clubs. This trend mirrors that of other areas in California and the United States, where average losses of wetlands have ranged from approximately 50- to 90 percent (Dahl 1990).





The largest loss of hydrologically connected wetlands in Tomales Bay came with diking of approximately 550 acres for operation of the Waldo Giacomini dairy ranch and pastures in 1946. A portion of this wetland complex had already been lost around the turn of the 20th century, when a levee was constructed across the mouth of Bear Valley and Olema Creeks for a road.

Since then, the Project Area has been subjected to numerous alterations for maintenance and operations purposes. Levees on Lagunitas Creek within the Giacomini Ranch have been reinforced through rip-rapping. Tomasini Creek, which once flowed through the East Pasture, has been moved and leveed to run adjacent to the Point Reyes Mesa, while Bear Valley Creek has been realigned to run along the eastern perimeter of Olema Marsh. Tides have been excluded by tidegates and other structures. Upstream Lagunitas Creek waters have been pumped to the Giacomini Ranch to irrigate pastures. Former tidal creeks have been straightened and new channels, dug to serve as ditches for irrigation waters, with ditches frequently maintained through dredging. Wetlands have been filled, leveled, and, in the case of the Giacomini Ranch, subject to varying degrees of manure spreading. Vegetation has been altered through removal of riparian vegetation, as well as introduction of non-native herbs and forbs to increase forage for approximately 500-800 head of grazing dairy cattle. In some cases, lack of maintenance can be the problem in highly altered systems such as Olema Marsh, as attested to by steadily increasing water levels during recent years within the marsh from lack of culvert maintenance.

Wetlands Serve Important Functions for Humans and Wildlife

Wetlands play an important role in the health of aquatic and terrestrial ecosystems. They provide valuable functions for humans and wildlife such as storing floodwaters, dissipating energy of flood flows, improving water quality, providing habitat and food for wildlife, as well as providing recreational opportunities and support of mariculture and fisheries industries. Loss or degradation of wetlands eliminate or substantially reduce the potential for wetlands to serve some of these important functions.

Within the Project Area, levees have dramatically reduced floodwater retention in floodplains of Lagunitas Creek and Tomasini Creek, with levees along Lagunitas Creek potentially exacerbating flooding of adjacent private properties. Removal of riparian vegetation on levees has also decreased the ability of riparian systems to dissipate the energy of flood flows, leading to faster, more turbulent, and erosive flows. In Olema Marsh, steadily increasing water surface levels created by poor drainage of Bear Valley Creek flows have not only reduced the potential volume of floodwater that can be stored, but threaten to increase flooding of adjacent county roadways such as Levee Road and Bear Valley Road.

While the Giacomini Ranch and Olema Marsh are still largely wetland and home to at least two federally listed threatened or endangered species, their value to the larger Lagunitas Creek and Tomales Bay ecosystems has been greatly diminished by land degradation and the lack of hydrologic connectivity. Wetlands on the Giacomini Ranch largely consist of monotypic expanses of wet pasturelands created through seeding of non-native grasses and herbs and lack the structural habitat diversity so important to wildlife. The conversion of Olema Marsh to freshwater marsh through diking has ostensibly increased its attractiveness to some wildlife species, such as waterbirds, but it likely has also displaced species that could have historically occurred in the transitional zone between fresh and salt water, such as the federally listed endangered species, tidewater goby (*Eucyclogobius newberryi*).

Tomales Bay Degraded by Pollution and Other Impacts

The issue of wetland and floodplain functionality could prove particularly important in Tomales Bay. Historically, the Bay has been viewed as a pristine estuary and even used as a reference site in ecological studies. However, the largely rural nature of this watershed has not rendered it immune to impact from human uses, including failing septic systems, agriculture, mercury mining, landfill operations, and oil spills. Beaches and swimming areas within the Bay and adjacent areas sometimes must be closed due to poor water quality conditions. During the last decade, poor water quality has forced one of the bay's leading industries, oyster fisheries, to close down several times and, in the late 1990s, was associated with a virus outbreak in people eating oysters from Tomales Bay. Mercury mining in the Tomales Bay watershed during the late 1960s-1970s caused deposition of mercury-contaminated sediment into the Bay and continues to threaten commercially and recreationally important fisheries.

The failure of Tomales Bay to consistently meet water quality standards for designated beneficial uses such as oyster mariculture and public recreation and wildlife needs prompted the San Francisco District of the Regional Water Quality Control Board (RWQCB) to designate the bay and some of its subwatersheds as impaired for

sediment, nutrients, pathogens, and mercury under Section 303(d) of the Clean Water Act. The RWQCB is in the process of finalizing or developing several new water quality standards for Tomales Bay through the Total Maximum Daily Load (TMDL) process, which sets maximum limits of loading to designated water bodies for pollutants of concern such as sediment, nutrients, pathogens, and mercury.

Water quality problems threaten not only the oyster fisheries and humans using the Bay for recreational purposes, but the freshwater, estuarine, and marine wildlife species that use Tomales Bay for breeding or foraging habitat. Because of its importance to wildlife, Tomales Bay is not only part of the Golden Gate Biosphere Reserve and a California Critical Coastal Area, but in 2002, it was nominated as a "Wetland of International Importance" under an international treaty called the Convention on Wetlands (commonly known as the Ramsar Convention). Tomales Bay is also one of 16 wetland areas that qualify for inclusion as a wetland of regional importance under the Western Hemisphere Shorebird Reserve Network because of its large number of wintering and migrating shorebirds (Kelly 2001).

Restoring Wetlands Can Improve Health of Bay

Wetland functionality can be restored or improved through restoration of degraded wetlands. The number and quality of functions performed by wetlands can be increased considerably by removing sources of pollution, discontinuing harmful management activities, and eliminating or reducing constraints on natural hydrologic processes, which are key to many of the important functions played by wetlands. Natural hydrologic processes include marine-influenced tidal action with the daily ebb and flood of tides and fluvial or creek action, which encompasses the seasonal cycle of freshwater flow, as well as overbank flooding onto floodplains and movement of the creek channel during storm events.

In addition to improving conditions within individual wetlands, restoring or improving functionality may also improve the health of the overall ecosystem. Within the Project Area, restoration of natural hydrologic processes through removal or replacement of levees, tidegates, and culverts and increased connectivity with historic floodplains would potentially reduce flooding within the local community by increasing the amount of floodplain available for storage or conveyance of floodwaters. Increased connectivity of floodwaters with floodplains could also improve water quality, because floodwaters carry sediments, nutrients, pathogens, and contaminants that could now be deposited onto floodplains rather than transported downstream to Tomales Bay. The potential value of the Project Area to improvement in downstream water quality is underscored by the fact that two-thirds of water flowing into the Bay comes from Lagunitas Creek (Fischer et al. 1996), which is currently leveed to run through the middle of the Giacomini Ranch. Restoring these wetlands would not only benefit flooding and water quality, but would increase habitat and food resources for wildlife within the Project Area and the entire Tomales Bay watershed.

The potential importance to the health of Tomales Bay and the outer Marin coastline of restoring hydrologic connectivity between the Giacomini Ranch, Olema Marsh, and Tomales Bay is underscored by the relative scarcity of coastal wetlands present along the central California coastline. Giacomini Ranch and Olema Marsh account for as much as 12 percent of the historic wetlands present along the outer central California coast and as much as 1 percent of wetlands along the entire outer California coastline. The relative scarcity of coastal wetlands present within this watershed and the surrounding California coastline increases their importance and the impact of losses that have occurred.

Purpose of Project

Background

A large portion of Tomales Bay watershed lands were acquired by the Park Service in the 1960s and 1970s for establishment of two neighboring parks -- Point Reyes National Seashore (Seashore) and Golden Gate National Recreation Area (GGNRA). The Giacomini Ranch was not among lands acquired, but in 1980, the boundary for GGNRA was expanded to include the Giacomini Ranch and the eastern portion of Tomales Bay. This boundary expansion enabled the GGNRA to acquire lands in these areas when funds and willing owners became available. After several decades of discussion with the Giacomini family, the ranch was eventually acquired in February 2000 with a combination of Congressional appropriations and state monies. State funding was secured from the California Department of Transportation (CalTrans), which transferred funds to the Park Service for purchase, planning, and implementation of a restoration project in exchange for the Park Service assuming wetland mitigation obligations for impacts associated with a road repair in the coastal

portion of Marin County. While the Park Service is required under its agreement with CalTrans and regulatory agencies to mitigate only a small amount of wetlands, the Memorandum of Understanding called for restoration of a “significant portion” of the Giacomini Ranch.

Purpose, Objectives, and Constraints

Purpose

The purpose of the proposed project is to restore natural hydrologic processes within a significant portion of the Project Area, thereby promoting restoration of ecological processes and functions.

Objectives

In addition to the primary purpose, the Park Service and the CSLC have identified three objectives that either define the purpose more clearly or identify other “purposes” that are considered desirable. The three objectives are:

- Restore natural, self-sustaining tidal, fluvial (streamflow), and groundwater hydrologic processes in a significant portion of the Project Area, thereby enabling reestablishment of some of the ecological processes and functions associated with wetland and riparian areas, such as water quality improvement, floodwater storage, food chain support, and wildlife habitat.
- Pursue a watershed-based approach to restoration in that restoration planning for the Project Area will emphasize opportunities to improve ecological conditions within the entire Tomales Bay watershed, not just in the Project Area itself.
- To the extent possible, incorporate opportunities for the public to experience and enjoy the restoration process as long as opportunities do not conflict with the project’s purpose or with Park Service, CSLC, or other agency legislation or policies.

Constraints

In developing alternatives, many factors can act to constrain development or implementation of alternatives. These include legal, regulatory, and logistic and technical constraints. Many of these constraints are evaluated as subject topics under impact analysis, but certain critical constraints warranted additional consideration. These constraints include:

- *Flood risks to adjacent private residences and public roads would not be increased above current levels.* The Giacomini Ranch and adjoining private residential and county road areas fall within the 100-year floodplain and experience substantial flooding even during 10-year events. Federal guidelines for floodplain management direct federal agencies to reduce the risk of flood loss and to minimize the impact of floods on human safety, health and welfare, as well as to restore and preserve the natural and beneficial values served by floodplains.
- Saltwater intrusion conditions into groundwater wells in Point Reyes Station would not exceed current levels, or any increase caused by the proposed project would be mitigated by the project proponents. North Marin Water District (NMWD) operates a municipal groundwater well for the town of Point Reyes Station in an alluvial aquifer directly north of the Project Area. During the summer, when demand is highest, NMWD has experienced salinity intrusion into its groundwater wells. NMWD has expressed concerns regarding the potential for increased salinity intrusion with removal of the levees and restoration of the Ranch to tidal wetlands.
- Impacts to the amount of breeding habitat for the tidewater goby and California red-legged frog would be minimized to the extent practicable. Existing habitat would not necessarily be managed in situ or in current locations, but rather would be allowed to develop elsewhere in response to changes in the hydrologic regime and boundary between salt- and freshwaters following implementation of restoration: The federally-endangered tidewater goby and federally-threatened California red-legged frog occur in the Project Area. These brackish and freshwater species may have either established or increased in numbers relative to historic conditions within the Project Area due to diking and impoundment of freshwater. The Park Service mandates parks to protect and to strive to recover all species that are listed under the Endangered Species Act and to manage designated critical and essential habitats (NPS 2006; Section 4.4.2.3). However, habitat

requirements of these species conflict with those of other target species and with the nature of the landscape being restored.

Alternatives

NEPA and CEQA require project proponents to identify a range of reasonable project or action alternatives within an EIS/EIR. Reasonable action alternatives must be economically and technically feasible and demonstrate common sense. With the exception of the No Action alternative, alternatives must meet, to a large degree, stated purpose, goals, and objectives for taking action and not be in conflict with federal, Park Service, state, and local laws, regulations, and policies or constraints identified during scoping. A No Action – or No Project -- alternative must be analyzed under NEPA and CEQA: this alternative evaluates future conditions under existing management plans or agreements and allows the public to evaluate the implications of what would happen if the proposed project was not implemented.

As part of the alternative development process, at least eight full-scale alternatives, as well as smaller-scale design variations of restoration and public access components, were considered. Of these eight alternatives, five are fully analyzed in this document. The other three were considered, but rejected because they would not adequately meet the project's purpose and objectives or were considered too similar in scope or duplicative to other existing alternatives. These alternatives and some of the more substantial variations to existing alternative design assessed are briefly discussed in the section, "Alternatives Considered But Not Analyzed Further," in Chapter 2 of the document.

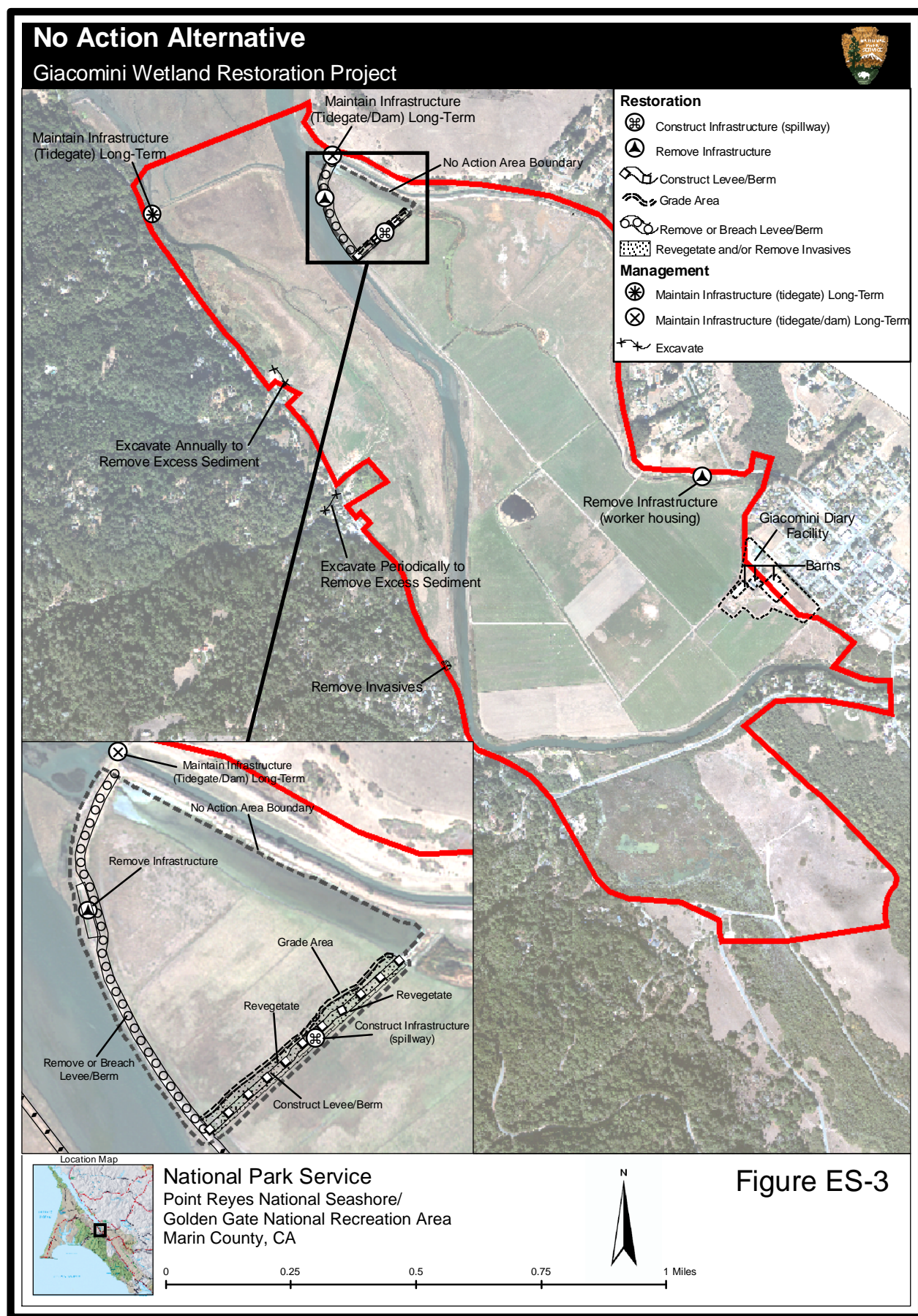
The following five alternatives have been developed for the Giacomini Wetland Restoration Project DEIS/EIR:

- **No Action Alternative, including Actions Common to All Alternatives** – Management of Project Area as Specified Under Current Management Plan and Existing Agreements, Including Mitigation as Required by Existing Mitigation Agreement and Maintenance of Existing Public Access Facilities
- **Alternative A** – Limited Restoration of the Giacomini Ranch East Pasture with Expanded Public Access, Including Culverted Earthen Fill Trail on Eastern Perimeter
- **Alternative B** – Moderate Restoration of the Giacomini Ranch East Pasture and Limited Restoration of the West Pasture with Expanded Public Access, Including Boardwalk Trail on Eastern Perimeter
- **Alternative C (Preferred Alternative)** – Full Restoration of the Giacomini Ranch East and West Pastures and Restoration of Olema Marsh, with Moderate Public Access
- **Alternative D (Environmentally Preferred Alternative)** – Extensive Restoration of the Giacomini Ranch East Pasture, Full Restoration of the West Pasture, and Restoration of Olema Marsh with Limited Public Access

Action alternatives generally range from the least (Alternative A) to the greatest amount of restoration (Alternative D) and build upon each other such that restoration components or elements from Alternative A are generally (but not always) carried forward to Alternative B and often expanded. The No Action Alternative involves a small mitigation/restoration component that would satisfy the Park Service's obligation to CalTrans and the CCC. Under Alternatives C - D, restoration efforts are expanded to include Olema Marsh. For the public access component, the extent of constructed infrastructure is highest under Alternatives A and B and decreases under Alternatives C and D, such that the least extent of constructed infrastructure occurs in Alternative D. There would be no change to public access under the No Action Alternative.

No Action Alternative, including Actions Common to All Alternatives

Under the No Action Alternative (ES Figure 3), levees, tidegates, and culverts in the Giacomini Ranch would remain. An 11-acre area would be restored on the northeast corner of the east pasture to satisfy mitigation requirements under an existing Park Service agreement with CalTrans. The remainder of the levees in the East Pasture and West Pasture would remain, although there would be no levee or other agricultural maintenance. Under the No Action Alternative only, there is potential for limited grazing, with consultation conducted under a separate compliance process. Olema Marsh would not be restored, and there would be no new public access facilities: existing facilities would be retained (ES Figure 4).



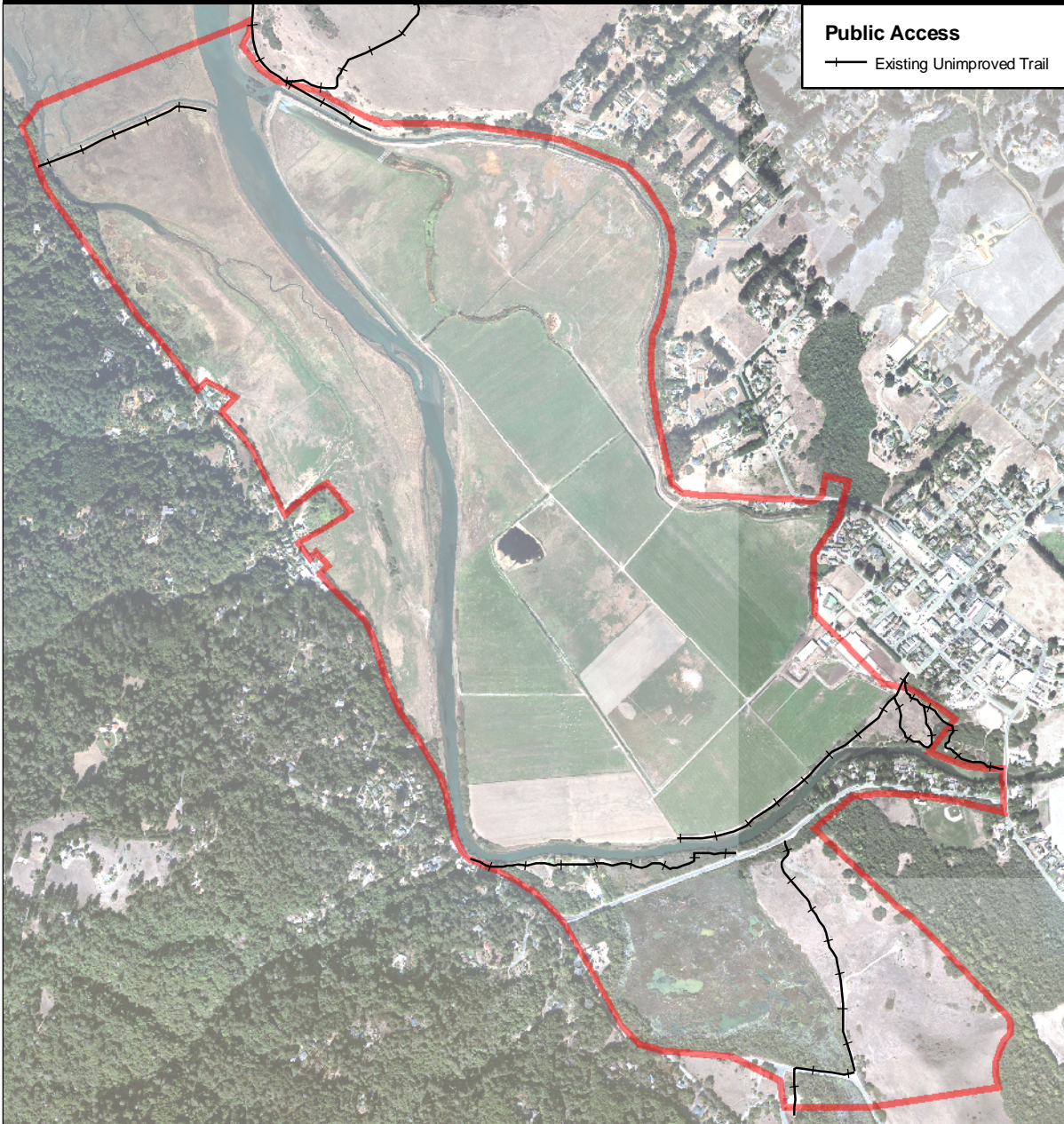
No Action Alternative - Public Access

Giacomini Wetland Restoration Project



Public Access

— Existing Unimproved Trail



Location Map



National Park Service
Point Reyes National Seashore/
Golden Gate National Recreation Area
Marin County, CA



Figure ES-4

0 0.25 0.5 0.75 1 Miles

Management Actions Common to All Alternatives

All of the alternatives have several management actions in common that will be performed in concurrence with existing agreements or the existing General Management Plan for the Seashore and north district of the GGNRA. These include:

- No Agricultural Land Management
- Removal of Main Dairy structures from Upland Areas
- Removal of High Priority Invasive Plant Species
- Dedication of Lagunitas Creek Appropriative Water Right to In-Stream Flow Uses
- Recover the Tomales Bay Tidewater Goby Population
- Leasing of the Subtidal Portion of Lagunitas Creek in the Project Area from CSLC
- Maintenance Removal of Excess Sediment from 1906 Drainage and Fish Hatchery Creek in West Pasture
- Removal of Personal Property from Premises, including Worker Housing Along Tomasini Creek

Restoration and Management Actions Specific to the No Action Alternative

- Mitigation Requirements Completed through Wetland Restoration in East Pasture
- No Dairy Operation or Agricultural Land Management, Except for Leased Grazing Contingent upon Separate Public Review
- Tidegates and Levees Retained, But Generally Not Maintained
- Existing Public Access Maintained Along Informal Paths

Construction

- Construction would occur during one construction year and would only involve mitigation actions required under Park Service's agreement with CalTrans.
- Construction would result in excavation of approximately 3,800 cubic yards of soil and 120 cubic yards of concrete, pipe, and other non-soil materials.
- More than two-thirds of excavated material would be re-used to construct new levee and high marsh habitat (~2,900 cubic yards).
- Approximately 880 cubic yards of soil would be hauled to an abandoned quarry in the Tomales Point portion of the Seashore. Non-soil materials and demolition debris would be recycled or disposed of off-site at a municipal landfill in Petaluma, California.
- Dump trucks hauling excavated materials would use local and connector roadways such as Mesa Road, C Street, Sir Francis Drake Boulevard, and Levee Road and state highways such as State Route 1.

Alternative A – Limited Restoration of the Giacomini Ranch East Pasture Only with Expanded Public Access, Including Culverted Earthen Fill Trail on Eastern Perimeter

Alternative A (ES Figure 5) would involve selective breaching of the East Pasture levee, while levees and tidegates in the West Pasture would not be removed. A limited amount of tidal channel creation, creek bank grading, and revegetation would also be performed in the East Pasture. Restoration actions in Alternative A encompass actions common to all Action Alternatives and are carried forward into Alternatives B-D. Most of the actions under this alternative focus on removal agricultural infrastructure such as filling of ditches, ripping of compacted roads, fence removal, and removal of pumps, pipelines, and concrete spillways, as well as removal of ranch buildings.

Alternative A - Restoration and Management

Giacomini Wetland Restoration Project

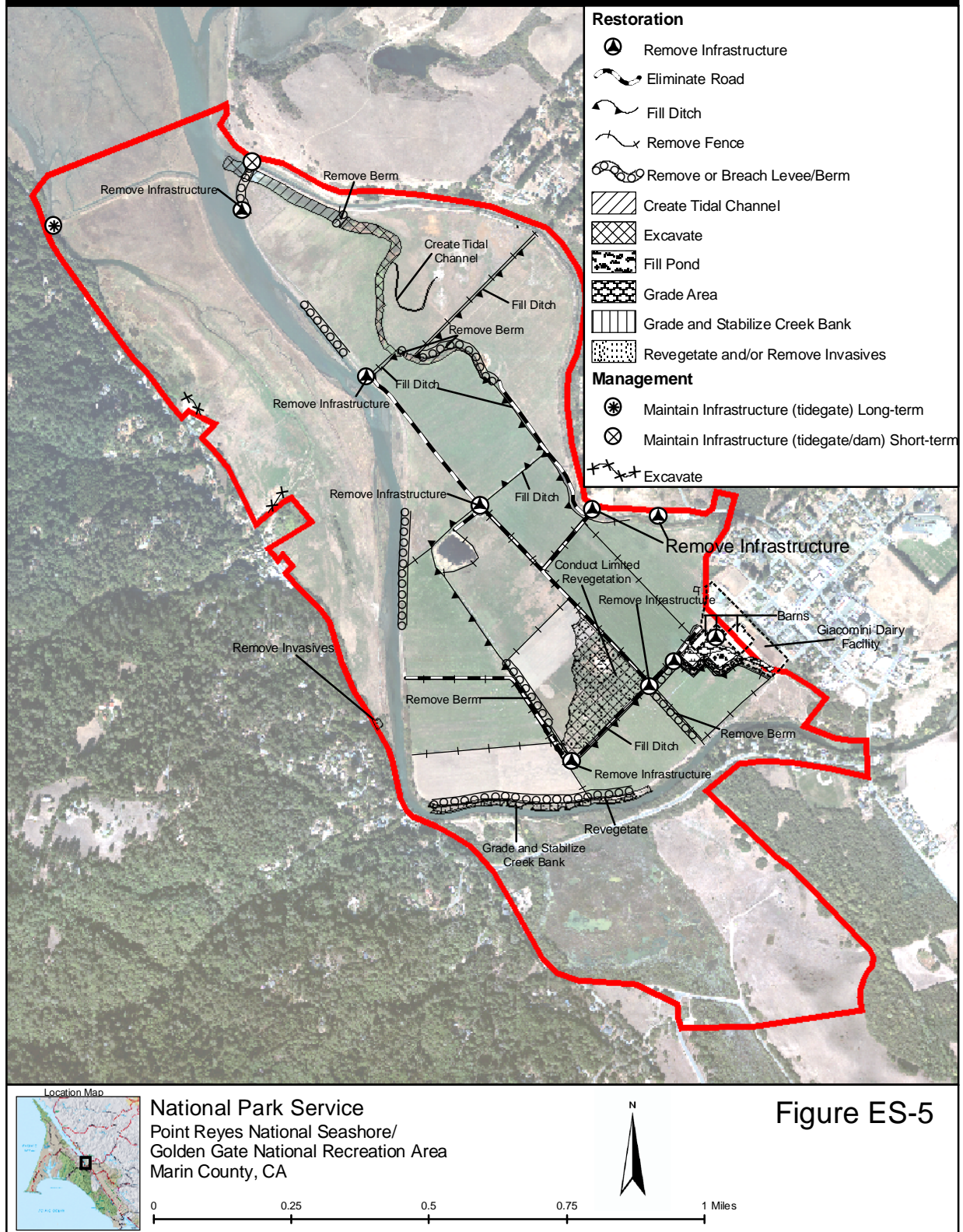


Figure ES-5

As part of the public access, the southern perimeter trail would include a prefabricated bridge across Lagunitas Creek, near the old summer dam location across from White House Pool County Park (ES Figure 6). The bridge design would place footings outside of the active channel, thereby reducing effects on hydrologic processes. Future extension of the southern perimeter trail, in collaboration with the County of Marin, would connect White House Pool County Park with a path along Sir Francis Drake that would either run alongside Sir Francis Drake Boulevard or move off the road at the southern end of the unrestored West Pasture onto a low-elevation boardwalk that would join back with Sir Francis Drake Boulevard in Inverness Park. The other infrastructure that would be constructed under Alternative A would be a culverted berm through- trail on the eastern perimeter of the East Pasture (ES Figure 6).

Restoration – East Pasture

- Removal of Agricultural Infrastructure
- Excavation and Restoration of Manure Disposal Pastures and Disposal Ponds
- Limited Breaching of Levee in Southern and Northern Portions of East Pasture
- Lagunitas Creek Bank Graded to More Stable Profile and Revegetated
- Deepening of Historic Slough and Creation of New Tidal Channels
- Removal of Invasive Plant Species
- Revegetation in East Pasture

Restoration – West Pasture

- There would be no restoration conducted in the West Pasture other than the removal of high priority invasive species described under the No Action Alternative.

Restoration – Olema Marsh

- There would be no restoration conducted in Olema Marsh.

Management

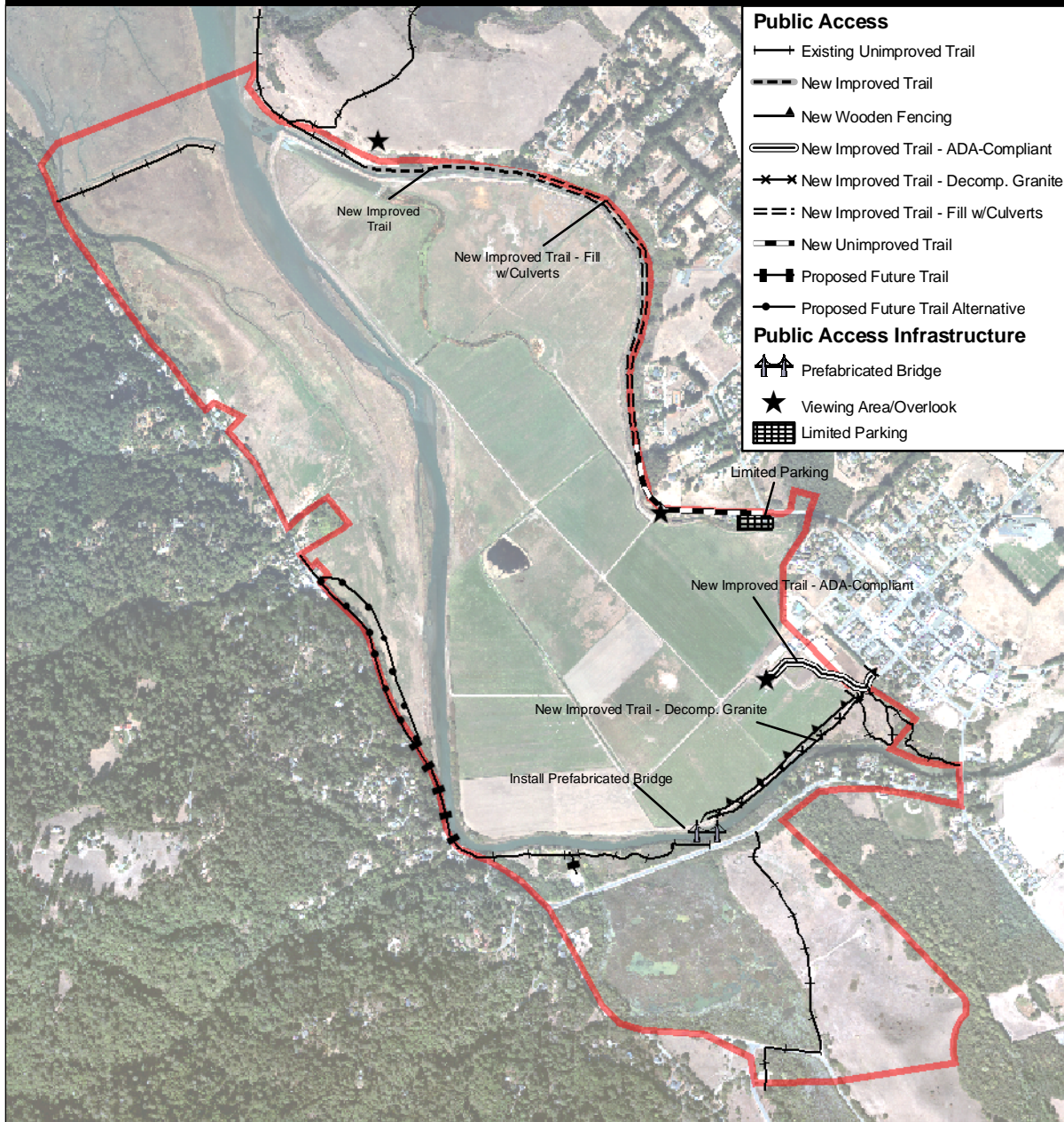
- Same as discussed under Actions Common to All Alternatives under the No Action Alternative.

Public Access

- Creation of Southern Perimeter Trail from Point Reyes Station to existing White House Pool County park via a Permanent Pedestrian/Bike bridge near Location of Old Summer Dam
- Potential Future Extension of Southern Perimeter Trail to Inverness Park in Collaboration with County
- Creation of Eastern Perimeter Trail Through Extension of Tomales Bay Trail from Railroad Point to Mesa Road
- Existing Public Access Maintained Along Informal Path
- Construction of Viewing Areas, Overlooks, and Interpretative Exhibits

Alternative A - Public Access

Giacomini Wetland Restoration Project



Location Map



National Park Service
Point Reyes National Seashore/
Golden Gate National Recreation Area
Marin County, CA



Figure ES-6

0 0.25 0.5 0.75 1 Miles

Construction

- Construction would occur only in the East Pasture. The restoration component would be constructed in one year. The public access component would be constructed over a period of one to two years during and/or after completion of restoration: the exact timing of construction is dependent on the Park Service and CSLC securing funding.
- Construction would result in excavation of approximately 86,000 cubic yards of soil and at least 680 cubic yards of concrete, pipe, and other non-soil materials and demolition debris.
- Approximately 40,250 cubic yards of fill would be re-used on-site. The other approximately 46,200 cubic yards of soil would be hauled to several abandoned quarries in the Tomales Point portion of the Seashore. Non-soil materials and demolition debris would either be recycled or hauled to a municipal landfill approximately 40 miles away in Petaluma, Calif.
- Dump trucks hauling excavated materials would use local and connector roadways such as Mesa Road, C Street, Sir Francis Drake Boulevard, and Levee Road and state highways such as State Route 1.

Alternative B – Moderate Restoration of the Giacomini Ranch East Pasture and Limited Restoration of the West Pasture with Expanded Public Access, Including Boardwalk Trail on Eastern Perimeter

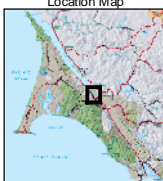
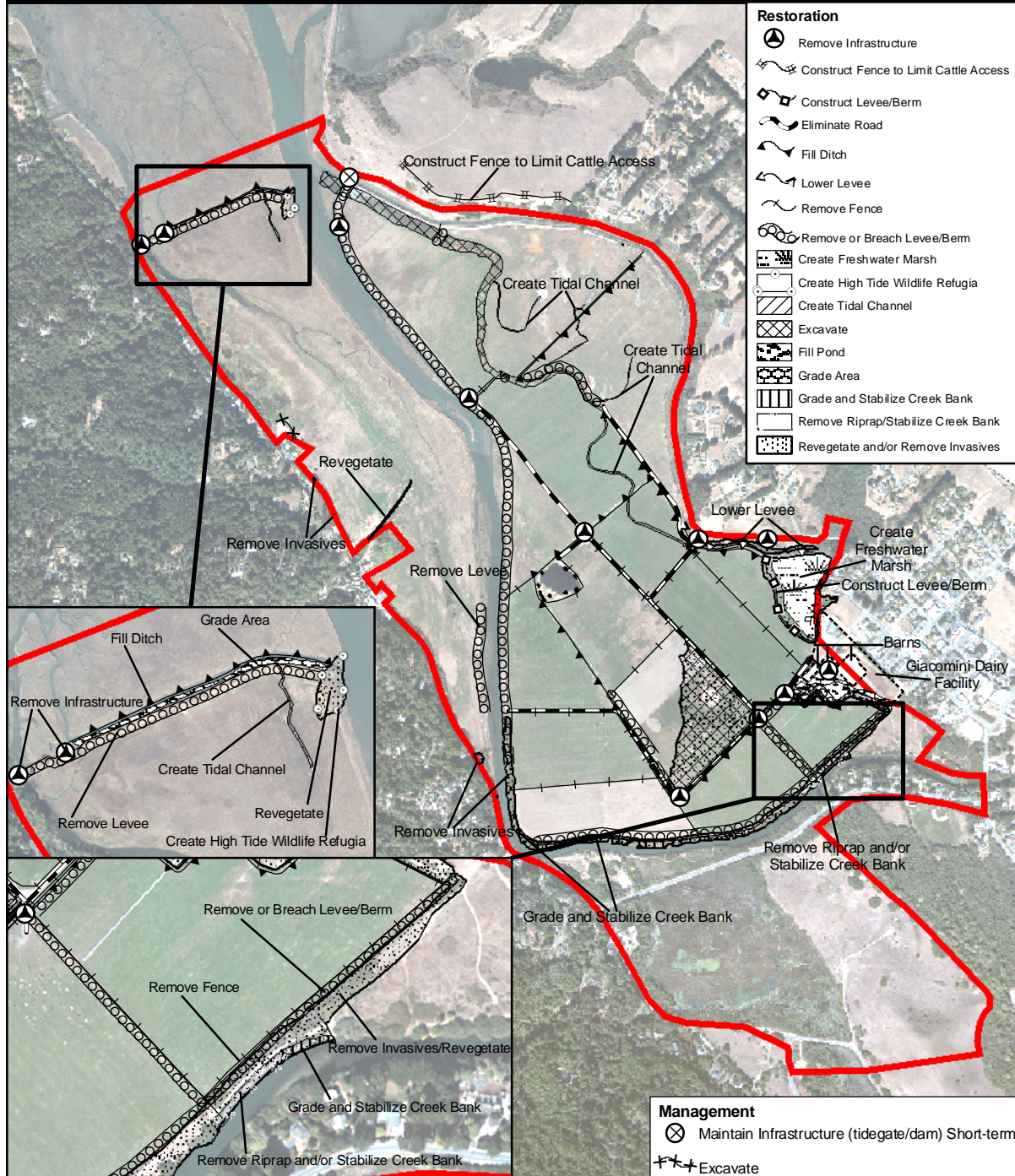
This alternative would completely remove the East Pasture levees and create several breaches in the West Pasture levee, as well as remove the tidegate on Fish Hatchery Creek (ES Figure 7). In general, this alternative builds upon the actions proposed in Alternative A by increasing tidal channel creation, grading, and revegetation. There would be no activities associated with the Olema Marsh. Most of the new public access facilities would continue to be limited to the eastern and southern perimeters of the East Pasture, including construction of the pedestrian access bridge across Lagunitas Creek near the old summer dam, and a planning area for the potential continuation of the southern perimeter trail to Inverness Park (ES Figure 8). The culverted-earthen fill portion of the eastern perimeter through-trail in Alternative A would be replaced with a boardwalk in Alternative B. On the West Pasture north levee, a viewing area would replace the existing informal trail.

Restoration – East Pasture

- Removal of Agricultural Infrastructure
- Excavation and Restoration of Manure Disposal Pastures and Disposal Ponds
- Creek Bank Graded to More Stable Profile and Revegetated
- Removal of Riprap and Regrading of Creek Bank in southern portion of East Pasture
- Complete Removal of Levee in East Pasture
- Lowering of Tomasini Creek Berm
- *Deepening of Historic Slough and Creation of New Tidal Channels*
- *Creation of Freshwater Marsh and High Water Refugia in Tomasini Triangle*
- *Installation of Fencing on Martinelli Ranch*
- *Removal of Invasive Plant Species*
- *Revegetation in East Pasture*

Alternative B - Restoration and Management

Giacomini Wetland Restoration Project

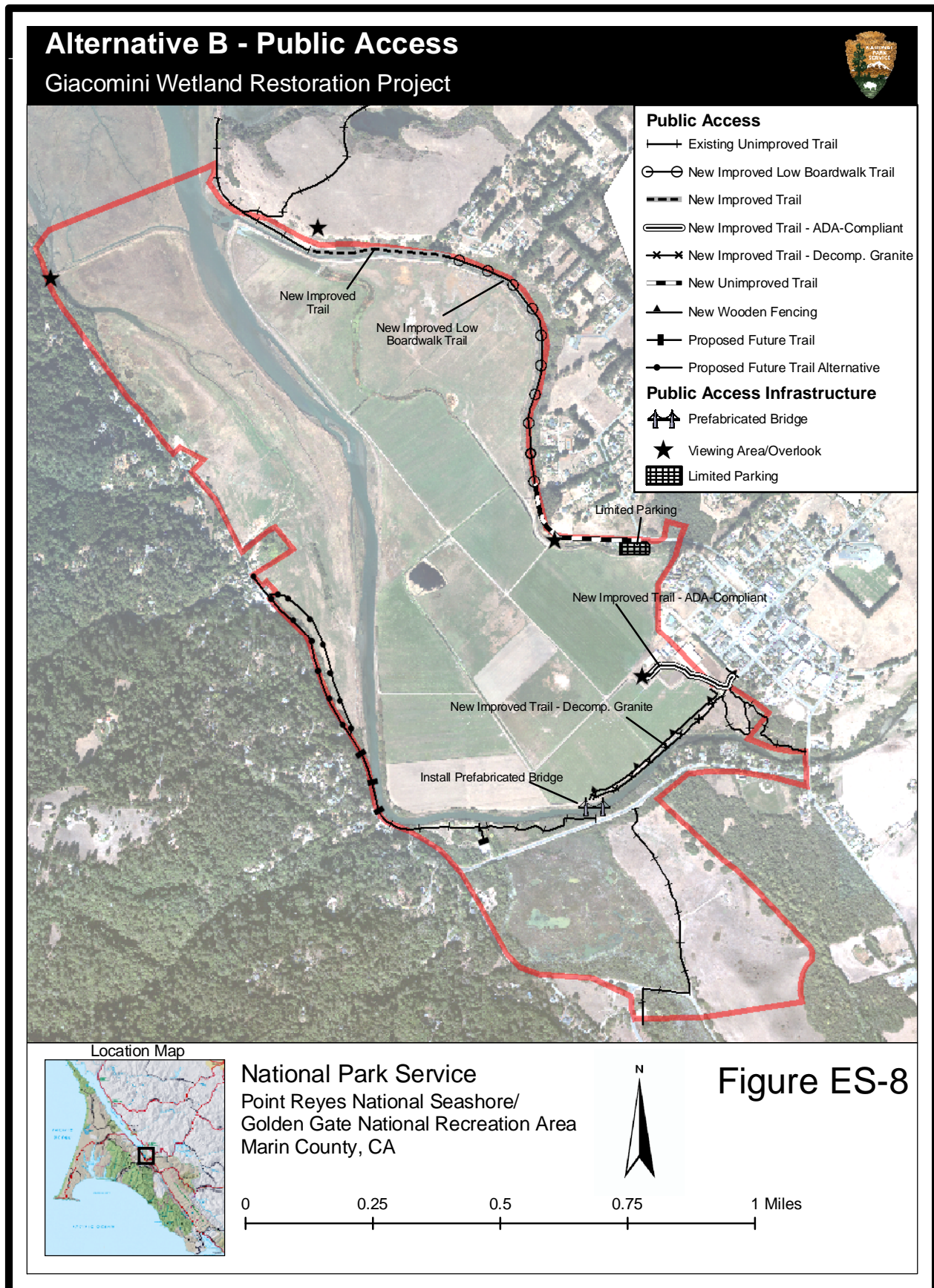


National Park Service
Point Reyes National Seashore/
Golden Gate National Recreation Area
Marin County, CA

0 0.25 0.5 0.75 1 Miles



Figure ES-7



Restoration – West Pasture

- Removal of Agricultural Infrastructure
- Limited Breaching of Levee in Southern and Northern Portions of West Pasture and Filling of Borrow Ditch
- Creation of New Tidal Channels
- Removal of Invasive Plant Species
- Revegetation in West Pasture

Restoration – Olema Marsh

- There would be no restoration conducted in Olema Marsh.

Management

- Same as discussed under Actions Common to All Alternatives under the No Action Alternative.

Public Access

- Creation of Southern Perimeter Trail from Point Reyes Station to existing White House Pool County park via a Permanent Pedestrian/Bike Bridge near Location of Old Summer Dam
- Potential Future Extension of Southern Perimeter Trail to Inverness Park in Collaboration with County
- Creation of Eastern Perimeter Trail Through Extension of Tomales Bay Trail from Railroad Point to Mesa Road
- Construction of Viewing Areas, Overlooks, and Interpretative Exhibits

Construction

- Construction would occur in the East and West Pastures of the Giacomini Ranch. The restoration component would be constructed over a period of two years. The public access component would be constructed over a period of one to two years during and/or after completion of restoration: the exact timing of construction is dependent on the Park Service and CSLC securing funding.
- Construction would result in excavation of approximately 144,000 cubic yards of soil and at least 850 cubic yards of concrete, pipe, other non-soil materials, demolition debris.
- Fill would involve re-use of approximately 72,200 cubic yards of excavated sediment on-site for restoration and public access components.
- Approximately 71,300 cubic yards of soil would be hauled to abandoned quarries in the Tomales Point portion of the Seashore. Excavated non-soil materials would be recycled or disposed of off-site at a municipal landfill approximately 40 miles away in Petaluma, Calif.
- Dump trucks hauling excavated materials would use local and connector roadways such as Mesa Road, C Street, Sir Francis Drake Boulevard, and Levee Road and state highways such as State Route 1.

Alternative C (Preferred Alternative) – Full Restoration of the Giacomini Ranch East and West Pastures and Restoration of Olema Marsh, with Moderate Public Access

Alternative C involves complete removal of levees in both the West and East Pasture (ES Figure 9). In general, this alternative builds upon the actions proposed in Alternative B by increasing tidal channel creation, grading, and revegetation. In addition, the project boundary for this alternative has been expanded to include Olema Marsh, which is located south of the Giacomini Ranch and White House Pool and is owned by Audubon

Canyon Ranch (ACR) and the Park Service. Olema Marsh and the Giacomini Ranch once formed an integrated tidal wetland complex. In Alternative C, there would be an adaptive restoration approach proposed for Olema Marsh that would include a phased approach to shallow channel excavation, vegetated berm removal, and potential replacement of Levee Road and Bear Valley Road culverts in the future should initial restoration efforts not achieve the desired degree of success. Public access components of Alternative C include the southern perimeter path and proposed future trails as described under Alternatives A and B, but there would be two spur trails rather than a through-trail on the eastern perimeter of the Giacomini Ranch (ES Figure 10).

Alternative C incorporates a substantial amount of restoration and provides resource-compatible public access opportunities on the southern and eastern perimeters of the Project Area. Because Alternative C offered the best combination of restoration and public access benefits, it was selected as the Seashore's preferred alternative at this time. It is likely that the Seashore would select the preferred alternative for implementation, unless new information, including information from public comments, becomes available that would suggest that implementation of another alternative would be preferable.

Restoration – East Pasture

- Removal of Agricultural Infrastructure
- Excavation and Restoration of Manure Disposal Pastures and Disposal Ponds
- Creek Bank Graded to More Stable Profile and Revegetated
- Removal of Riprap and Regrading of Creek Bank in southern portion of East Pasture
- Complete Removal of Levee in East Pasture
- Remove Portion of Tomasini Creek Berm and Reconnect Tomasini Creek to Historic Channel
- Deepening of Historic Slough and Creation of New Tidal Channels
- Creation of New Lagunitas Creek Tidal Side-Channel
- Creation of Freshwater Marsh and High Water Refugia in Tomasini Triangle
- Installation of Fencing on Martinelli Ranch
- Scraping of Southern Portion of East Pasture to Remove Non-Native, Weedy Plants
- Removal of Invasive Plant Species
- Revegetation in East Pasture

Restoration – West Pasture

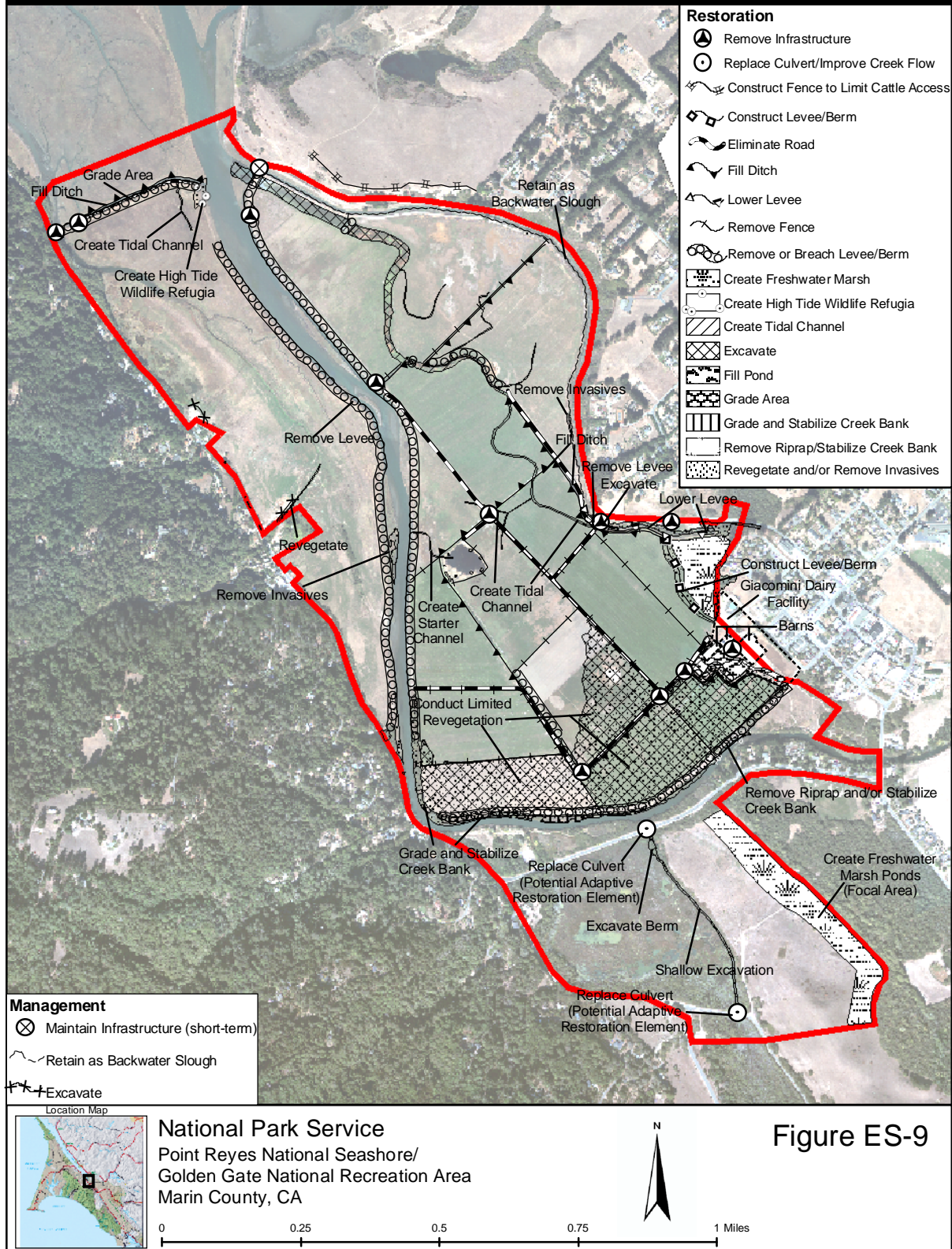
- Removal of Agricultural Infrastructure
- Complete Removal of Levee in West Pasture and Filling of Borrow Ditch
- Filling of the borrow ditch north of the Giacomini Ranch West
- Creation of New Tidal Channels
- Removal of Invasive Plants
- Revegetation in West Pasture

Restoration – Olema Marsh

- Implement Adaptive Restoration in Olema Marsh
- Adaptive Restoration Component #1: Excavate Vegetated Earthen Berm and Create More Defined Flow Path for Bear Valley Creek
- Adaptive Restoration Component #2 and/or 3: Potential Future Replacement of Levee Road and/or Bear Valley Culvert with Small Causeway or Bridge as part of Adaptive Restoration Approach.

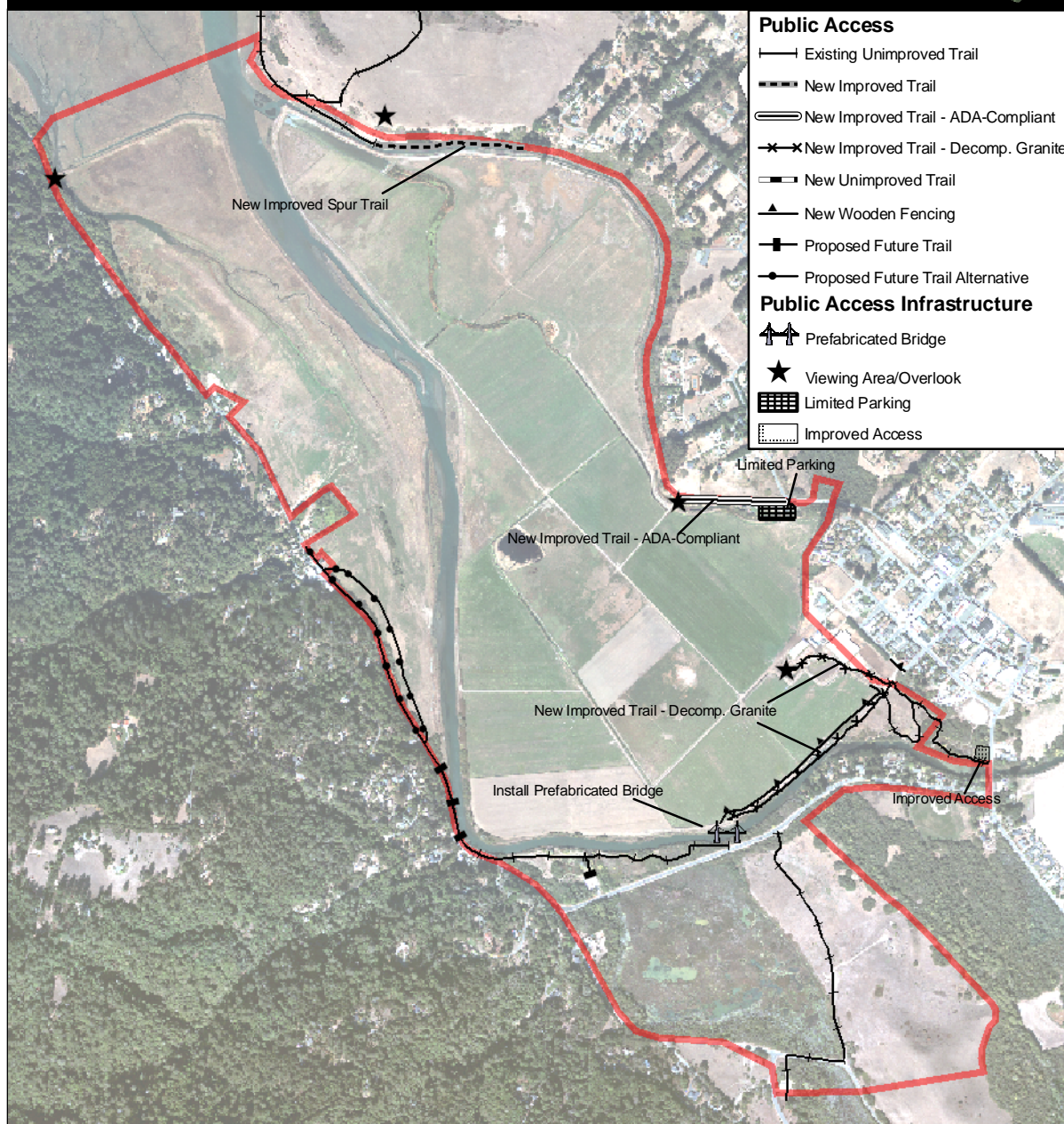
Alternative C - Restoration and Management

Giacomini Wetland Restoration Project



Alternative C - Public Access

Giacomini Wetland Restoration Project



Location Map



National Park Service
Point Reyes National Seashore/
Golden Gate National Recreation Area
Marin County, CA



Figure ES-10

0 0.25 0.5 0.75 1 Miles

Management

- Same as was described under Actions Common to All Alternatives under the No Action Alternative.

Public Access

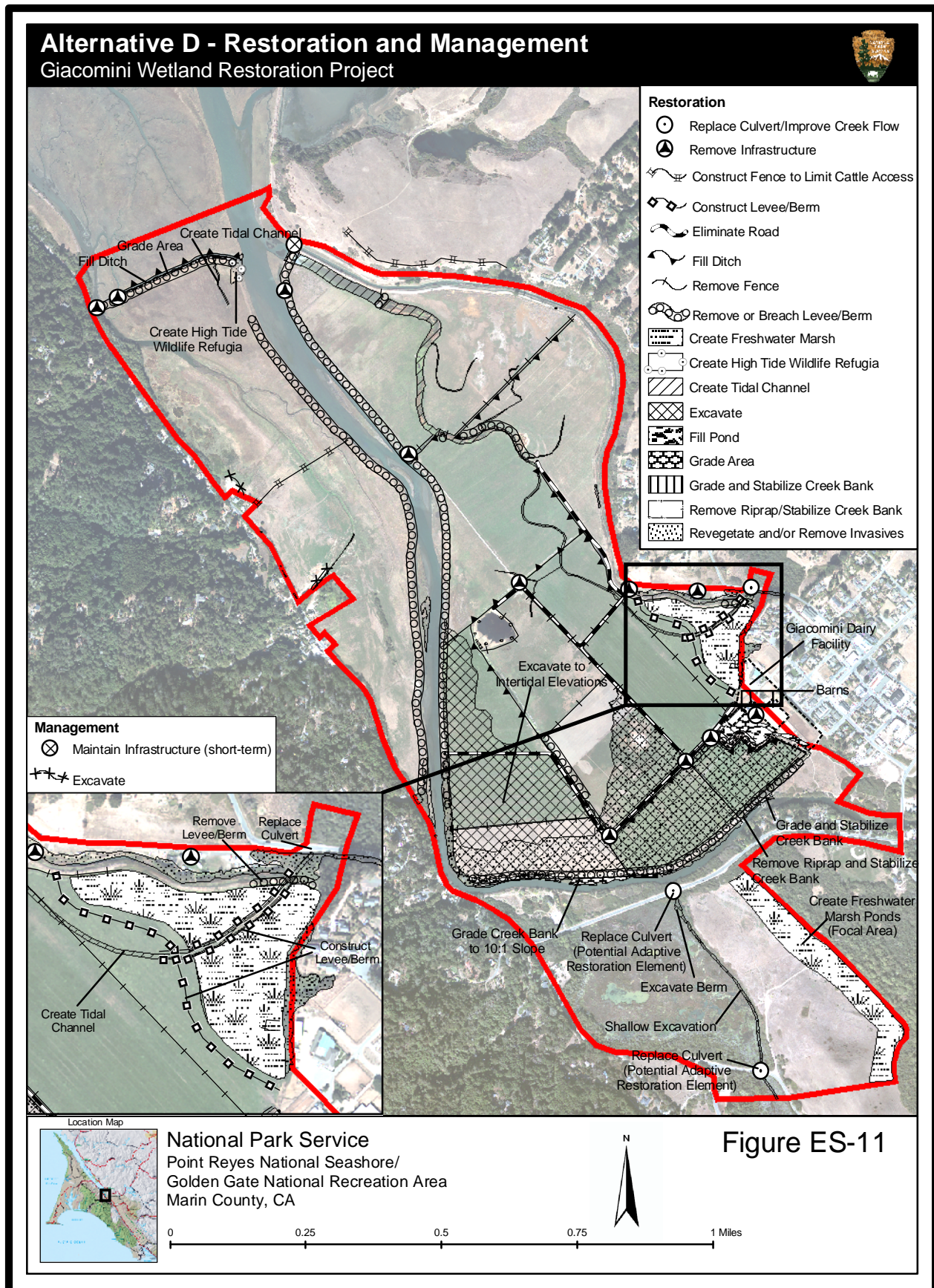
- Creation of Southern Perimeter Trail from Point Reyes Station to existing White House Pool County park via a Permanent Pedestrian/Bike Bridge near Location of Old Summer Dam
- Potential Future Extension of Southern Perimeter Trail to Inverness Park in Collaboration with County
- Potential Replacement of Existing Wooden Footbridge over Bear Valley Creek in Olema Marsh with Pedestrian Causeway Integrated into Levee Road Causeway
- Creation of Eastern Perimeter Spur Trails Through Extension of Tomales Bay Trail and Mesa Road
- Construction of Viewing Areas, Overlooks, and Interpretative Exhibits

Construction

- Construction would occur in the East and West Pastures of the Giacomini Ranch and Olema Marsh. The restoration component in the Giacomini Ranch would be constructed over a period of two years. The Olema Marsh restoration component would be constructed over a longer period commensurate with the proposed adaptive management approach. The public access component would be constructed over a period of approximately two years during and/or after restoration is completed: the exact timing of construction is dependent on the Park Service and CSLC securing funding.
- Construction would result in excavation of approximately 200,000 cubic yards of soil and at least 830 cubic yards of concrete, pipe, demolition debris and other non-soil materials. This includes approximately 3,650 cubic yards of shallow excavation in Olema Marsh, most of which would be sidecast.
- Fill would involve re-use of approximately 87,250 cubic yards of excavated sediment on-site. Approximately 113,000 cubic yards of sediment would be hauled to abandoned quarries in the Tomales Point portion of the Seashore. Non-soil materials would be hauled to a municipal landfill approximately 40 miles away in Petaluma, Calif.
- Dump trucks hauling excavated materials would use local and connector roadways such as Mesa Road, C Street, Sir Francis Drake Boulevard, and Levee Road and state highways such as State Route 1.

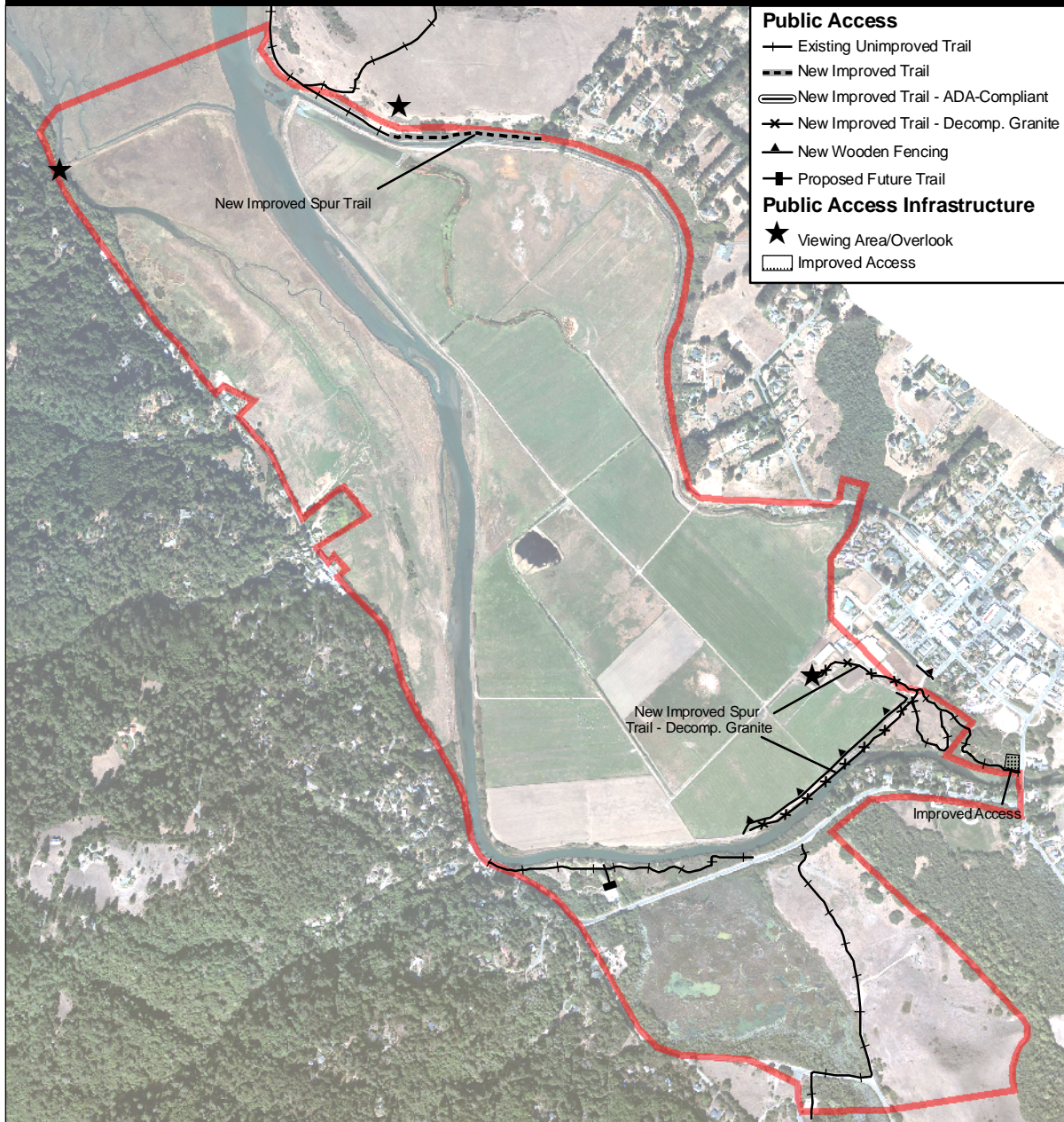
Alternative D (Environmentally Preferred Alternative) – Extensive Restoration of the Giacomini Ranch East Pasture, Full Restoration of the West Pasture, and Restoration of Olema Marsh with Limited Public Access

This alternative is very similar to Alternative C with no changes in the West Pasture (ES Figure 11). The very southern end of the East Pasture would be excavated to bring elevations down to intertidal elevations. Tomasini Creek would be fully realigned into one of its historic channel alignments, and the Mesa Road culverts on Tomasini Creek would be replaced to improve hydraulic connectivity, creek flow, and passage of salmonid species. As with Alternative C, there would be an adaptive restoration approach proposed for Olema Marsh that would include a phased approach to shallow channel excavation, vegetated berm removal, and potential replacement of Levee Road and Bear Valley Road culverts in the future should initial restoration efforts not achieve the desired degree of success. Public access components of Alternative D would include an improved spur trail leading to the edge of the Dairy Mesa and an improved spur trail on the southern perimeter following the existing alignment of the informal social path, but no bridge (ES Figure 12). On the eastern perimeter, a spur trail would be created on the historic railroad grade that would extend the existing Tomales Bay Trail.



Alternative D - Public Access

Giacomini Wetland Restoration Project



Location Map



National Park Service
Point Reyes National Seashore/
Golden Gate National Recreation Area
Marin County, CA



Figure ES-12

0 0.25 0.5 0.75 1 Miles

Restoration – East Pasture

- Removal of Agricultural Infrastructure
- Excavation and Restoration of Manure Disposal Pastures and Disposal Ponds
- Creek Bank Graded to More Stable Profile and Revegetated
- Removal of Riprap and Regrading of Creek Bank in Southern Portion of East Pasture
- Complete Removal of Levee in East Pasture
- Remove Portion of Tomasini Creek Berm and Reconnect Tomasini Creek to Historic Channel Alignment
- Replace Tomasini Creek Culverts at Mesa Road
- Deepening of Historic Slough and Creation of New Tidal Channels
- Creation of Freshwater Marsh and High Water Refugia in Tomasini Triangle
- Installation of Fencing on Martinelli Ranch
- Scraping of Southern Portion of East Pasture to Remove Non-Native, Weedy Plant Species
- Excavation of Southwestern Portion of East Pasture to Intertidal Elevations
- Removal of Invasive Plant Species
- Revegetation in East Pasture

Restoration – West Pasture

- Removal of Agricultural Infrastructure
- Complete Removal of Levee in West Pasture and Filling of Borrow Ditch
- Filling of the Borrow Ditch North of the Giacomini Ranch West Pasture
- Creation of New Tidal Channel
- Removal of Invasive Plant Species
- Revegetation in West Pasture

Restoration – Olema Marsh

- Implement Adaptive Restoration in Olema Marsh
- Adaptive Restoration Component #1: Excavate Vegetated Earthen Berm and Create More Defined Flow Path for Bear Valley Creek
- Adaptive Restoration Component #2 and/or 3: Potential Future Replacement of Levee Road and/or Bear Valley Culvert with Small Causeway or Bridge as part of Adaptive Restoration Approach.

Management

- Same as discussed under Actions Common to All Alternatives under the No Action Alternative

Public Access

- Creation of Southern Perimeter Spur Trail from Point Reyes Station to Location of Former Summer Dam
- Creation of Eastern Perimeter Spur Trail Through Extension of Tomales Bay Trail
- Construction of Viewing Areas, Overlooks, and Interpretative Exhibits

Construction

- Construction would occur in the East and West Pastures of the Giacomini Ranch and Olema Marsh. The restoration component in the Giacomini Ranch would be constructed over a period of two years. The Olema Marsh restoration component would be constructed over a longer time period commensurate with the proposed adaptive management approach. Replacement of the Tomasini Creek culvert at Mesa Road would likely also occur after restoration in Giacomini Ranch due to the need to raise funds. The public access component would be constructed over a period of approximately two years during and/or after restoration is completed: the exact timing of construction is dependent on the Park Service and CSLC securing funding.
- Construction would result in excavation of approximately 251,000 cubic yards of soil and 1,000 cubic yards of concrete, pipe, demolition debris and other non-soil materials and fill of approximately 45,600 cubic yards of soil. Total excavation includes the approximately 3,650 cubic yards of shallow excavation in Olema Marsh that would be sidecast.
- Fill would involve re-use of approximately 89,000 cubic yards of excavated sediment on-site. Approximately 160,000 cubic yards would be hauled to abandoned quarries in the Tomales Point portion of the Seashore. Non-soil materials would be hauled to a municipal landfill approximately 40 miles away in Petaluma, Calif.
- Dump trucks hauling excavated materials would use local and connector roadways such as Mesa Road, C Street, Sir Francis Drake Boulevard, and Levee Road and state highways such as State Route 1.

Affected Environment/Environmental Consequences and Mitigation Measures

Land Use and Planning – General Land Use

Tomales Bay and the Point Reyes region falls within a complex, multi-jurisdictional region, with lands in a variety of ownership, including private, County, local water districts, state agencies (State Land Commission, state parks, Wildlife Conservation Board, CalTrans), and federal agencies such as the Park Service and the U.S. Coast Guard. Applicable land use plans or other documents that guide development in the Project Area include the Seashore's General Management Plan, the Point Reyes Station Community Plan, the Marin County Local Coastal Program (LCP) Unit II, the Marin Countywide Plan, and the Marin County Zoning Ordinance.

The impacts of Alternatives A, B, C, and D would generally range from minor adverse to beneficial major impacts on general and park-related land use and land use and development policies in the Seashore and local community. The No Action Alternative would have a moderate beneficial effect on natural resources on parklands through a small wetland restoration/mitigation component and the discontinuation of intensive agricultural management practices, if not necessarily grazing. Alternatives A, B, C, and D would have a major beneficial effect on natural resources on parklands through restoration of the East Pasture, discontinuation of agricultural management practices and grazing, and removal of agricultural infrastructure.

Unlike the No Action and Alternatives A and B, Alternatives C and D would either partially or fully comply with objectives stated in the Point Reyes Station Community Plan regarding realignment of Tomasini Creek in the Project Area into its historic alignment, as well as restoration of former tidal marshes at the head of Tomales Bay. The proposed project would not either directly or indirectly induce substantial growth in the local community.

All of the alternatives have the potential, particularly in combination with some proposed and reasonably foreseeable housing development projects in Point Reyes Station, to have a minor adverse effect on the rural character and functioning of the local community by causing a noticeable change in conditions, but this change would not be expected to fundamentally alter the rural nature of the local community and environs.

Land Use and Planning – Agricultural Land Use

Farmland is protected under various federal, state, and local laws, regulations, and policies. At a federal level,

the Farmland Protection Policy Act is intended to minimize the impact federal programs have on the unnecessary conversion of farmland to non-agricultural uses. Because of the value of agriculture to Marin's economy and its scenic pastoral landscape, the County and Coastal Zone LCP (Marin County Comprehensive Planning Department 1981) have both identified maintenance of agriculture as a high priority.

Under the No Action Alternative, the conversion from dairy to park lands would comply with local policies on conversion of agricultural lands and lands protected under the Williamson Act, because it would either be retained as grazing land or converted to open space, which is an approved or conditional use of agricultural lands. For Alternatives A - D, this conversion would comply with local policies on conversion of agricultural lands and lands protected under the Williamson Act or Agricultural Production Zone zoning, because it would be converted to open space or a wildlife refuge, which is, respectively, an approved or conditional use for these types of agricultural lands. All of the alternatives would also comply with exemptions in LCP agricultural land use policies for conversions of lands that were not suited for agriculture prior to the conversion of agricultural lands (Section 30241 (c)).

Based on an analysis conducted using California's Land Evaluation and Site Analysis model, conversion of the Giacomini Ranch from a dairy to open space or wildlife refuge would represent only a negligible or minor adverse impact on agricultural land use in the local community, depending on whether leased grazing is approved under the No Action Alternative. However, cumulative effects of other ranches closing could increase impacts from loss of the dairy to West Marin agriculture. Alternatives A-D would also comply with LCP policies that call for agriculture in federal parklands to be maintained unless incompatible with resource protection, because agricultural uses would either be reduced or discontinued in area that is more than 90 percent wetland.

Geologic Resources

The Project Area has been sharply defined by this region's unique geologic history. The San Andreas Fault, responsible for the 1906 Earthquake that devastated San Francisco, runs directly through the Project Area and Tomales Bay. The San Andreas Fault is perhaps the best known fault in California, although there are more than 20-30 other faults in the San Francisco Bay region. Tomales Bay is a relatively shallow estuary that has formed within the long, linear, submerged "rift" valley that has developed between the northwestward-moving Pacific plate and the continental North American plate.

The geologic impacts of the alternatives are largely related to topographic changes and the attraction of visitors to highly seismically active area. The No Action Alternative would have negligible effects on topographic resources because of implementation of the wetland mitigation/restoration component. Alternatives A and B would have minor beneficial effects on topographic resources, because changes in topographic resources would involve primarily the removal of fill to restore historic marsh conditions with the exception of fill placement required for trail creation. The most apparent change in Alternatives C and D relative to the other action alternatives is the appreciable increase in the amount of area in which topographic conditions would be changed, as well as the amount of area that would be subjected to more intensive excavation and fill activities (> 1.0 foot). Most of this increase would come from changes in Olema Marsh, which would subside as a result of improved hydraulic connectivity and drainage of waters afforded by the proposed restoration activities. The adaptive restoration approach proposed could result in anywhere from 0.66 to 3 feet of surface elevation lowering or subsidence from oxidation and decomposition of extensive peat material present in Olema Marsh. The other change under Alternative D is the excavation of the southeastern portion of the East Pasture to intertidal elevations, which causes a slight increase in areal extent and average depth of fill or excavation relative to Alternative C. Under Alternatives B-D, there is also the potential for construction of a low berm in the western portion of the West Pasture to protect private properties from increased flooding if levees are breached or removed.

Under Alternatives A, B, and C, there would be potential minor adverse impacts on public safety related to geologic hazards associated with construction of new trails on the southern and eastern perimeter and a bridge across Lagunitas Creek and possible extension of the southern perimeter trail to Inverness Park. These impacts would be no more than minor, because of the small number of people expected to visit compared to other major destination areas within the parks and the relatively low probability of a major earthquake in the Project Area vicinity. The most substantial change in Alternative D relative to Alternative C is the removal of the bridge under the public access component, which reduces, if not eliminates, potential threats to public safety from geologic hazards such as surface fault ruptures.

Soil Resources

One of the most valuable functions that wetlands can contribute to improving the health of a watershed is filtration and/or transformation of nutrients, sediment and contaminants in associated surface and ground water sources. Soluble and sediment-bound nutrients, sediment, bacteria, and contaminants such as metals and pesticides can enter wetlands through tidal or freshwater flow and are often retained through being bound to sediment. Through binding to sediment or assimilation by plants, natural wetlands are believed to remove as much as 20 to 50 percent of nitrogen, phosphates, and metals from source waters (Kadlec and Knight 1996).

With the increasing number of wetland restoration projects in San Francisco Bay and the central California coast in the past decade, concerns have been raised among biologists and hydrologists that these stable “sinks” for contaminants could potentially become “sources” of contamination to the environment (Davis et al. 2003). This remobilization could potentially reduce productivity and filtering functions of wetlands, create water quality problems, or reintroduce toxins that may be uptaken by wildlife (Davis et al. 2003).

Under the No Action Alternative, the potential shift from a dairy to either leased grazing and/or open space lands would result in a minor to moderate reduction in nutrients. This is because, even if leased grazing is permitted in the future, it would be of a much lesser scale and intensity than current operations. The dairy often disposes of manure through concentrated application in certain pastures with light application elsewhere in the East Pasture.

Under Alternatives A-D, removal of cattle and discontinuation of agricultural management would result in moderate reductions in sediment nutrient concentrations over the long-term. However, hydrologic reconnection of the Giacomini Ranch to Lagunitas Creek would increase the potential for influxes of nutrient-laden waters from fluvial and tidal sources, including Lagunitas Creek. The largest differences in soil impacts between the action alternatives come from the removal of levees along Lagunitas Creek, restoration of Olema Marsh, and rerouting of Tomasini Creek into one of its historic alignments in the East Pasture.

Under Alternatives C-D, where Olema Marsh would be restored, decreases in surface water levels associated with improved hydraulic connectivity and subsequent dewatering of Olema Marsh would expose flooded peat soils to air and cause rapid compaction through accelerated rates of organic matter decomposition that would have appreciable effects on soil nutrient pools. These changes would be expected to have minor short-term adverse impacts on soil nutrient conditions through rapid release to overlying waters, but long-term effects would be considered beneficial as nutrient levels and rates of nutrient processing began to approach conditions more characteristic of natural undiked marshes.

Sediment contaminant concentrations in the Giacomini Ranch, which appear to be very low currently (Parsons and Allen 2004c), might increase from removal of levees along Lagunitas Creek and/or Tomasini Creek. The risk of potential contaminant exposure generally increases from the No Action Alternative through Alternative D, consistent with the increase in the amount of levee breaching or removal and culvert replacement. Recent sampling by the Regional Water Quality Control Board shows that most of the mercury is at least currently concentrated in outer Tomales Bay, so the potential risk of mercury contamination in the Project Area appears negligible at this time. A higher potential for exposure to contaminants would probably come from rerouting of Tomasini Creek into one of its historic alignments through the East Pasture. Creek channels and floodplain in the East Pasture may become exposed to potential contaminant sources in Tomasini Creek that may have originated from the now-closed West Marin Landfill. In terms of Olema Marsh, the apparent absence of any contaminant sources in the Bear Valley Creek subwatershed would suggest that the risk of contaminant release from oxidation of peat and saline mineral soils in the marsh would be negligible.

From a watershed perspective, this alternative would have negligible to perhaps minor beneficial effects on the quality of subtidal and intertidal sediments in Tomales Bay through a potential decrease in loading of nutrients, contaminants, and other pollutants from Lagunitas Creek due to increased connectivity of the creek with its historic floodplain on the Giacomini Ranch.

Air Resources – Air Quality

The Seashore and north district of the GGNRA are classified as a Class I area under the Clean Air Act (42 USC 7401 et seq.). The Act requires land managers of Class I areas to protect air quality and related values, including visibility, plants, animals, soils, water quality, cultural and historic structures, and visitor health from the effects of air pollution.

Federal air quality standards have been set for seven pollutants, including ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), and particulate matter. The California Air Resources Board (CARB) has set stricter ambient air quality standards than national standards. Under the 1988 California Clean Air Act, air basins were designated as attainment, non-attainment, or unclassified for the state standards. The Bay Area Air Basin (SFBAAAB) is classified as a state non-attainment area for ozone and particulate matter.

A recent Park Service report states that “there are no significant air pollution effect concerns in this park [the Seashore] at the present time” (Sullivan et al. 2001). Some of the greatest threats to air quality within the Seashore and the western portions of Marin County come from the more urbanized eastern portions of the county and Bay Area, although the coast is buffered from these adverse influences by mountains and strong offshore winds.

Alternatives A-D would generally have negligible air quality impacts during construction, except for carbon monoxide and nitrogen dioxide (NO_x). Under Alternative A, equipment used for earthmoving would potentially generate short-term, temporary moderate adverse effects on air quality during construction in the East Pasture from NO_x emissions. Under Alternatives B, C, and D, NO_x emissions would increase from the more intensive restoration efforts proposed in the East Pasture, potentially becoming major under NEPA and substantial and significant under CEQA. These adverse effects would be mitigated to less than significant under CEQA and less than major under NEPA through implementation of Best Management Practices (BMPs) recommended by the Bay Area Air Quality Management District (BAAQMD 1999). Alternatives A –D would also potentially generate minor amounts of carbon monoxide (CO) from construction of the East Pasture component. Construction of the West Pasture, public access, and/or Olema Marsh components would only generate negligible emissions of NO_x and carbon monoxide.

Air quality impacts following construction would involve primarily emissions from vehicles and trucks associated with visitors and residents using existing public access facilities, as well as, to a lesser degree, property maintenance activities. Based on the number of maximum or peak vehicles projected on an hourly or daily basis, these effects would generally range from negligible adverse for the No Action Alternative and Alternatives C and D to negligible adverse (total emissions) and minor adverse (carbon monoxide) for Alternatives A and B. Under Alternatives A and B, impacts would be slightly higher, because there are a higher number of or more extensive public access facilities.

All of the alternatives would have a long-term minor beneficial effect on odors in the local community with conversion from the dairy to either open space or grazed lands. There may be some adverse effects during construction and over the short-term from disturbance of wetland (anoxic) and manure-laden soils. Short-term adverse effects would generally range from negligible under Alternatives A and B to moderate under Alternatives C and D. The increase in intensity of odor impacts under Alternatives C and D would potentially come from drainage-related decomposition of organic matter and related chemical changes in Olema Marsh.

Air Resources - Noise and Soundscapes

Unlike more urban parks, the Seashore and north district of GGNRA are located in a rural portion of western Marin County and must contend less with the intrusive influences of urbanization in terms of noise than southern portions of the GGNRA. In rural areas such as west Marin, major producers of undesirable human-caused sound are limited to automobile and truck traffic, jet airplanes, individual businesses, agricultural ranch activities, and individual construction projects. The Park Service is directed to preserve, to the greatest extent possible, the natural soundscapes of parks and to protect natural soundscapes from degradation due to noise, defined as “undesirable human-caused sound” (NPS 2001, Section 4.9). A number of federal, state, and local agencies have established policies regarding the maximum amplitude or peak pressure of the sound wave, which are measured in decibels. In 1994, the Marin County Noise Element mandated that residences, public spaces, and institutions not be subjected to noise levels above an average of 60 decibels (dB) over a 24-hour period or 60 dB-Ldn. Ldn refers to noise averaged over a 24-hour period or the Day-Night Equivalent Sound Level.

In general, construction-related traffic associated with hauling of excavated sediments would have only negligible to minor effects on soundscapes along local and regional roadways and on most of the sensitive receptors or residences near the Project Area because of attenuation of noise with distance and natural sound barriers. Hauling of excavated sediments to quarries in the Pierce Point Road vicinity would, however, potentially generate a minor increase in ambient noise levels during construction. Also, there are several sensitive noise receptor areas identified within the Project Area, where activities will be conducted in close proximity of homes on Levee Road, 3rd and C Streets in Point Reyes Station, and Sir Francis Drake Boulevard.

In these sensitive noise receptor areas, there is potential under Alternatives A-D for noise to temporarily exceed 75 dBA. This would be considered a substantial and significant impact under CEQA and a major impact under NEPA. While these impacts cannot be eliminated, they have been reduced to a moderate level under NEPA and a less-than-significant level under CEQA through adoption of noise-reducing construction management practices.

Following construction, most of the impacts on soundscapes and ambient noise conditions would be associated with increases in visitation and traffic due to construction or expansion of public access structures, facilities, and attractions/uses. The No Action Alternative would actually have a minor beneficial effect, because there would be no construction of new public access facilities, and loud and sharp noises associated with dairying such as milk trucks, hay trucks, earthmoving equipment, and ATVs would be discontinued with close of the dairy. Under Alternatives A-C, beneficial effects from closure of the dairy would be slightly offset by potential increases in ambient noise from the higher numbers of vehicles on local roadways. In addition, under Alternatives A and B, noise may potentially increase relative to existing conditions in areas such as 3rd and C Streets and the railroad grade and Mesa Road in Point Reyes Station, where trailheads would either be retained or located, respectively. Construction of the eastern perimeter through-trail or spur trails under Alternatives A –C would also introduce a new source of noise for residents on the Point Reyes Mesa. Under Alternative C, the Point Reyes Station trailhead for the southern perimeter trail would be moved from 3rd and C Streets to the Green Bridge. Under Alternative D, the Mesa Road spur trail and the Lagunitas Creek bridge would be eliminated, thereby decreasing potential noise impacts.

Overall, under Alternatives A-C, project implementation have a negligible to minor adverse effect on ambient noise conditions for at least certain areas within the local community, although ambient noise conditions would not exceed the county noise ordinance of 60 dB-Ldn. Under the No Action Alternative and Alternative D, the effects on ambient noise would be overall beneficial.

Water Resources – Hydraulics and Hydrologic Processes

The purpose of the proposed project is to restore tidal and freshwater hydrologic processes such as natural creek action, tidal flooding, floodplain connectivity, and sediment transport within a significant portion of the Project Area. Being at the upstream end of the Tomales Bay estuary, the Project Area represents the largest transitional zone between marine and freshwater influences within the watershed. Both tidal and freshwater hydrologic processes are important to the Project Area and are the cornerstone for almost all of the other functions provided by wetland ecosystems.

The extent of area subject to tidal action would be expanded appreciably under all of the action alternatives, with the largest increase coming from activities associated with restoration of the East Pasture. Removal of levee infrastructure and expansion of daily tidal flooding would increase the extent of area subject to daily tidal flooding from 189 acres under Alternative A to nearly 206 acres under Alternative D. The effects of the proposed project remain only moderate even under the most extensive alternatives, because the currently high elevations within the Giacomini Ranch would limit the extent of daily tidal influence, although higher areas would be subject to more infrequent tidal flooding. The degree of tidal influence in Olema Marsh would continue to be dictated under all alternatives by the continued presence of Levee Road, however, possible culvert replacement under Alternatives C-D would increase the extent and frequency of tidal action.

Freshwater creek or fluvial hydrologic processes would also be beneficially affected by the proposed project. The proposed project would remove, replace, or reduce the scale of hydrologic infrastructure and management practices, many of which have affected fluvial hydrologic processes such as culverts, levees, and ditching. Certain infrastructure and facilities such as Levee Road, Bear Valley Road, the Tomasini Creek tidegate and culverts, and culverts for Inverness Ridge drainages must remain in place because of community need or the presence of special status species, thereby slightly reducing the potential to fully restore natural creek processes, particularly in Olema Marsh.

Currently, most of the tidal and fluvial flow in the portion of Lagunitas Creek in the Project Area is restricted to the narrow corridor defined by the Giacomini Ranch levees and Levee Road. Based on computer modeling, Lagunitas Creek levees currently only overtop during larger storm events ranging from 3.5- to 12 years (KHE 2006a). Breaching and removal of the Giacomini Ranch under Alternatives A-D levees would result in floodwaters overtopping creek banks more frequently on a 2-year basis (KHE 2006a). In addition, under Alternatives C and D, Tomasini Creek is either partially or wholly rerouted into one of its historic channel alignments, thereby increasing interaction of this creek with its historic floodplain. Increasing the frequency and extent to which streams may access historic floodplains would result in moderate beneficial effects

(Alternative A) to major beneficial effects (Alternatives B-D) to floodplain process, floodwater retention, and, ultimately, water quality conditions within Tomales Bay (see Water Quality analysis). The cumulative volume of floodwater moving through floodplains in the Project Area would increase more than 1,000 percent under Alternative A to as much as 2,000 percent under Alternatives C and D, a reduction of approximately 10- to 20 percent, respectively, in cumulative floodwater volume conveyed in Lagunitas Creek (KHE 2006a).

Watershed disturbances during the past 150 years have increased the amount of sediment being transported to Tomales Bay. Excessive sedimentation has not only caused the Bay to become shallower over the past 150 years, but has decreased the clarity and quality of waters. By removing levees, the proposed project could divert some of this sediment load from Lagunitas and other watershed creeks into the Project Area and measurably decrease the amount of sediment being transported downstream. Overall, the proposed project would result in the diversion of potentially 10 percent (Alternative A) to 19 to 20 percent (Alternatives B-D) of suspended sediment currently delivered to Tomales Bay during storm events into the Project Area. These reductions in sediment delivery could have profound implications in terms of improving the overall condition of the Bay for both wildlife and humans.

Water Resources –Water Quality

Perhaps, one of the most important functions that wetlands can provide in Tomales Bay is water quality improvement. While Tomales Bay is often considered a relatively pristine estuary, the failure of Tomales Bay to consistently meet water quality standards prompted the RWQCB to designate it as impaired under Section 303(d) of the Clean Water Act.

In general, the action alternatives will result in beneficial impacts to water quality in the Project Area through removal of the active dairy operation and restoration of hydrologic processes, floodplain connectivity, and tidal marsh. Under the short-term, beneficial effects would remain negligible to minor, because residual nutrients from dairying would be expected to decline gradually, and the transition from pasture to tidal marsh would cause dieback and decay of vegetation, which could decrease dissolved oxygen and pH and cause nutrient pulses. Under Alternatives C and D, beneficial effects would be reduced further over the short-term by temporary nutrient pulses and drops in pH and dissolved oxygen expected in Olema Marsh with dewatering and reintroduction of limited tidal influence. These hydrologic changes would cause oxidation of organic matter and related biogeochemical changes in the largely peat soils and extensive dieback of vegetation, all of which would have temporary adverse impacts on water quality. However, as vegetative and hydrologic conditions stabilize in both the Giacomini Ranch and Olema Marsh, water quality conditions would also stabilize and improve, and, ultimately, Alternatives A-D would result in moderate to major beneficial effects on water quality in the Project Area over the long-term.

Benefits from the increased hydrologic connectivity would be more immediate at the Bay or watershed scale. As described earlier, the proposed project would result in the diversion of potentially 10 percent (Alternative A) to 19-20 percent (Alternatives B-D) of suspended sediment currently delivered to Tomales Bay during storm events into the Project Area. Evaluation of existing literature suggests that transport and deposition of other pollutants, including pathogens and some nutrient forms, are strongly correlated with suspended sediment transport processes, such that reductions in sediment would be expected to result in reductions in nutrients, pathogens, and contaminants. There are no definitive numbers for the percentage of certain nutrients, contaminants, and pathogens that could be potentially retained on floodplains. However, studies have shown that natural wetlands can remove as much as 20 to 50 percent of nitrogen, phosphates, and metals (Kadlec and Knight 1996) and more than 90 percent of pathogens (CH2MHill 1991 in Kadlec and Knight 1996). Overall, the alternatives would be expected to result in minor to moderate beneficial effects to water quality at the watershed scale not only because of the elimination of nutrients and pathogens produced by dairying, but the hydrologic reconnection of the several small to large source creeks with their floodplains. These watershed-scale benefits would be even higher over the long-term, ranging from minor to moderate, as vegetation reestablishes in restored areas and potentially increases the percentage of pollutants retained on floodplains.

Vegetation Resources

Many native vegetation communities within the United States have been adversely impacted by introduction of non-native plant species, as well as a host of other anthropogenic factors such as commercial, residential, and agricultural development, and resource extraction. These activities have affected all vegetation communities, but the most highly publicized and pervasive threats are perhaps those to wetland and riparian communities. Wetlands and other native vegetation communities provide habitats for native plant species, some of which

have decreased dramatically in numbers or range because of development and threats from non-native species.

The largest change to vegetation communities would come from the varying degrees of reintroduction of tidal action under Alternatives A-D. Restoration would result in a reduction of non-native Wet and Dry Pasture and Dry Grassland vegetation communities in the Giacomini Ranch portion of the Project Area from 25 percent under Alternative A to nearly 90 percent under Alternatives C and D as a result of levee breaching and removal and removal or replacement of culverts and tidegates. Over the short-term, benefits to native vegetation communities would either be reduced or offset by vegetation dieback and temporary invasion by weedy grass and brackish marsh species. Under Alternatives C-D, dewatering, subsidence or compaction of peat soils, and increased tidal influence with restoration of Olema Marsh would cause a temporary, but extensive dieback in Freshwater Marsh vegetation. However, over the long-term, most of the non-native pasture and brackish vegetation communities in the Giacomini Ranch would be converted to Tidal Brackish and Salt Marsh communities, which are largely dominated by native species, and, under Alternatives C-D, a mixture of Freshwater and Tidal Brackish Marsh would reestablish in Olema Marsh. Areas at higher elevations or adjacent to large sources of freshwater from creeks or groundwater would probably remain non-tidal communities such as Freshwater Marsh, Wet Meadow, and Wet Pasture or grassland.

While the project is intended to “restore” wetlands, nearly all of the Project Area is considered to be jurisdictional wetlands according to both Corps’ and the California Coastal Commission’s delineation standards. As part of the restoration process, there would be a small reduction in wetland area associated with creation of high tide refugia under Alternatives B-D and construction of the eastern perimeter trail under Alternatives A and B (Appendix C). Over the long-term, however, there would be a net increase in the extent of wetlands from approximately 9 acres (Alternative A) to 26 acres (Alternative D; Appendix C). A large majority of the riparian habitat within the Project Area is wet enough to be considered jurisdictional wetland, but in drier areas, non-wetland riparian habitat is protected by both CDFG and local streamside and bluff ordinances. Over the short term, there would actually be adverse impacts to riparian habitat from fill or vegetation removal under Alternatives A-B associated with construction of the eastern perimeter trail at the base of the Point Reyes Mesa. Over the long-term, however, expansion of riparian habitat throughout the Project Area would more than offset the reduction in riparian habitat associated with development of trails. The long-term beneficial effects to riparian habitat would be considered moderate under Alternative A and major under Alternatives B-D.

Most of the six rare species that occur or have to potential to occur in the Project Area are salt marsh or brackish marsh associates. These species include: Point Reyes bird’s-beak (*Cordylanthus maritimus* ssp. *palustris*; former FSC; FSRC; CNPS List 1B); Humboldt Bay owl’s-clover (*Castilleja ambigua* ssp. *humboldtensis*; former FSC; FSRC; CNPS List 1B); Marin knotweed (*Polygonum marinense*; former FSC; FSRC; CNPS List 3); Pacific cordgrass (*Spartina foliosa*; FSLC); salt marsh owl’s-clover (*Castilleja ambigua* ssp. *ambigua*; FSLC); and Lyngbye’s sedge (*Carex lyngbyei*; CNPS List 2). During construction, the project activities would result in adverse minor impacts to these species as the work would occur during the last third of the reproduction season and could reduce seed production in areas where topsoils are scraped and stockpiled. Over the long-term, however, the action alternatives would be expected to greatly expand distribution and numbers of these species not only Tomales Bay, but -- in combination with other proposed wetland restoration projects -- throughout the San Francisco Bay region. Habitat supporting special status plant species in the Project Area would expand by approximately 300 acres under Alternative A and up to 350 acres under Alternatives B, C, and D.

The Project Area does not support an extensive expanse of non-native plant species considered highly invasive. Removal of invasive plant species would help to ensure successful establishment and perseverance of native vegetation communities. Effects on non-native species distribution in the Project Area would range from beneficial minor under Alternative A with a 16 percent decrease to moderate beneficial under Alternatives B, C, and D with a 30 to 38 percent decrease.

Fish and Wildlife Resources

Wildlife Habitats and General Wildlife Use

Many wildlife species within the United States have been adversely impacted by increasing urbanization, resource extraction, contamination from pesticides, metals, and other pollutants, and introduction of non-native wildlife species.

In general, wildlife habitat diversity within the Project Area is relatively high, primarily because of the mix or mosaic of habitat types occurring along and adjacent to the Project Area perimeter. While the Giacomini Ranch is largely dominated by Pasture-Grasslands, the edges of the ranch support a mix of Freshwater Marsh, Muted Tidal Brackish Marsh, Meadows, Forested and Riparian and Scrub Shrub. Many of these habitats are considered High Value Wildlife Habitats in that they support an abundance of different types of wildlife and/or high numbers of particular types of wildlife (i.e., shorebirds, waterfowl) or that they provide important breeding, nesting, or adult habitat for endangered or threatened species. Habitat diversity along the ranch's edge largely appears to result from the substantial groundwater inflow, as well as a decrease in agricultural management. Habitats are less diverse in Olema Marsh, with Freshwater Marsh and Forested and Scrub-Shrub Riparian habitats dominant, but all represent important High Value Wildlife Habitats.

While moderate to intensive development and management of the Giacomini Ranch and Olema Marsh may have caused wildlife resources to decline relative to historic conditions, the Project Area nonetheless supports a diverse array of animal species, a large proportion of which are special status because their populations are considered at risk (ARA 2002). During baseline surveys, six reptile, four amphibian, 32 fish, and 194 bird species were observed in the Project Area (ARA et al. 2002).

As discussed earlier, the most extensive habitat change associated with the action alternatives would be conversion of non-native Pasture-Grassland to Tidal Salt and Brackish Marsh habitats. Most of the Giacomini Ranch would undergo a short-term transitional phase in which grasslands would start dying in response to increased tidal influence and become temporarily dominated by a mix of weedy, opportunistic low-growing brackish marsh species. Under the No Action Alternative and Alternatives A and B, the extent of riparian habitat adjacent to Olema Marsh would continue to decline over the short- and long-term, with increasing water levels converting fringe areas to Freshwater Marsh. Conversely, under Alternatives C and D, dewatering and increased tidal influence within Olema Marsh would cause extensive dieback of existing Freshwater Marsh vegetation and possible colonization of weedy, opportunistic species. These transitional changes would result in negligible (No Action, Alternatives A and B) to moderate (Alternatives C and D) adverse changes to High Value Wildlife Habitats over the short-term.

Over the long-term, High Value Wildlife Habitats would expand and be enhanced as infrastructure is removed or replaced, and monotypic habitats in both the Giacomini Ranch and Olema Marsh are replaced by a more dynamic and diverse ecosystem. As natural hydrologic processes reestablish and wetland-related habitats mature, the restored area would experience dramatic increases in the extent of High Value Wildlife Habitats, their quality, and their continuity or lack of fragmentation. Lower elevation areas in the Giacomini Ranch would convert to Tidal Salt Marsh or Tidal Brackish Marsh habitats. Higher elevation areas or areas along the perimeter would probably remain a mix of Freshwater Marsh, Meadows, and Forested and Scrub-Shrub Riparian habitats due to the decreased tidal influence and increased influence of creeks and groundwater from the Inverness Ridge and Point Reyes Mesa. Under Alternatives C and D, Freshwater Marsh and Muted Tidal Brackish Marsh would begin to reestablish within Olema Marsh as topographic, soil, and hydrologic conditions readjusted to the dramatically lower water levels. The extent of Muted Tidal Brackish Marsh in Olema Marsh could be increased by approximately 10- to 20 acres with adaptive restoration. These long-term changes would have universally beneficial effects on High Value Wildlife Habitats, ranging from minor under the No Action Alternative and moderate under Alternative A to major or substantial under Alternatives B-D. In general, High Value Habitat would increase by 10 percent relative to existing conditions under Alternative A, 40 percent under Alternative B, 43 percent under Alternative C, and 46 percent under Alternative D.

The increase in High Value Wildlife Habitats would benefit the diversity and abundance of wildlife species within the Project Area, at least over the long-term. During construction, there would be potentially some adverse impacts resulting from direct or indirect disturbance to wildlife and their habitats, with effects ranging from negligible under Alternative A to minor under Alternatives B– D. Over the short-term, the discontinuation or reduction in grazing and discontinuation of agricultural management practices would have at least negligible beneficial effects on general wildlife use, although use by some species such as savannah sparrows, western meadowlarks, roosting Canada geese, and amphibians and reptiles would probably decrease. Under Alternatives C and D, the extensive die-back in vegetation associated with dewatering of Olema Marsh would offset these negligible beneficial effects to some degree, resulting in an overall minor adverse effect on general wildlife use.

Over the long-term, however, discontinuation of agricultural management, combined with the removal of aquatic and terrestrial barriers, would promote establishment of more natural ecological gradients and generally support a more diverse and possibly abundant wildlife community. The use by certain species or groups of species such as landbirds and unique freshwater-related species such as California red-legged frog (*Rana aurora draytonii*; FT) and northwestern pond turtle (*Clemmys marmorata marmorata*; former FSC and

FSacSC) may decrease with conversion of pasturelands to marsh, but generally numbers and diversity of fish (including salmonids), benthic and pelagic invertebrates, shorebirds, and rare marsh passerines such as saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*; FSacSC; CSC) and California black rails (*Laterallus jamaicensis coturniculus*; ST) would be expected to increase. The intensity of these beneficial effects would range from negligible under the No Action Alternative and minor under Alternative A to moderate under Alternatives B – D.

With any disturbance, there is the potential for invasive wildlife species to move into or expand within the Project Area. Hydrologically reconnecting or increasing the connection between the Project Area and Tomales Bay increases the potential for establishment by invasive non-native aquatic species. Because the Project Area has already been invaded, the potential for increases in the number or extent of invasive species would be considered to be minor adverse.

Closure of the dairy and improved water quality conditions would result in short-term negligible beneficial improvements to wildlife conditions at the watershed scale. The restoration would not only improve conditions downstream, but increase accessibility and habitat quality of the Project Area for use by marine and estuarine organisms that move up occasionally into the southern end of Tomales Bay. In the long-term, Alternative D would be expected to have measurable improvements at the watershed scale, while improvements associated with Alternatives B, C, and D would be anticipated to be moderate.

Special Status Species

At least five federally endangered and two federally threatened species have historically or recently been documented in the Project Area. These species include the tidewater goby (*Eucyclogobius newberryi*; FE), central coast coho salmon (*Oncorhynchus kisutch*; FE), California clapper rail (*Rallus longirostris obsoletus*; FE, SE), California brown pelican (*Pelecanus occidentalis californicus*; FE, SE), Least Bell's vireo (*Vireo bellii pusillus*; FE; SE), California red-legged frog (FT), and central coast steelhead salmon (*Oncorhynchus mykiss*; FT). The northwestern pond turtle is listed as a Regional Species of Concern. State-listed endangered and threatened species total at least nine, many of which were also federally listed (see above). Species that are only listed by the state currently include American peregrine falcon (*Falco peregrinus anatum*; SE, FD); California black rail (*Laterallus jamaicensis coturniculus*; ST), bank swallow (*Riparia riparia*; FT), and sandhill crane (*Grus canadensis tabida*; FT).

California red-legged frog

Some of the largest remaining populations of the federally threatened California red-legged frog occur on the Point Reyes peninsula and adjacent areas. Within the Project Area, breeding populations of red-legged frog occur principally in two areas: 1) the Freshwater Marsh-Fish Hatchery Creek complex in the West Pasture and 2) Olema Marsh. There have been sporadic occurrences of adult red-legged frogs in the East Pasture, but there has been no breeding documented there (Fellers and Guscio 2002).

All of the alternatives, including the No Action Alternative, would result in some level of short-term and/or long-term adverse impact to documented breeding habitat of the California red-legged frog. Under the No Action Alternative and Alternative A, the current trend of saltwater intrusion into the West Pasture freshwater marsh during extreme high tides in the winter would continue, along with conversion of the northern half to Muted Tidal Brackish Marsh. This would result in loss of approximately 3.7 acres of red-legged frog breeding habitat. Over the short-term, impacts would probably be negligible and offset to some degree by natural Freshwater Marsh expansion with discontinuation of agricultural management. However, with deterioration of levees over the long-term, effects could increase to moderate adverse through increased intrusion of saltwater into remaining freshwater habitats.

Under Alternative B, levees and tidegates would be removed in the West Pasture, increasing tidal influence and conversion of the West Pasture freshwater marsh to brackish habitats. This would result in moderate adverse effects over the short-term through loss of another 1.5 acres of habitat, but eventual maturation of the created 5.4-acre freshwater marsh in the East Pasture Tomasini Triangle would offset these impacts over the long-term. However, long-term impacts would still be considered adverse, if negligible, because of the lack of documented breeding or established breeding habitat in the East Pasture.

Alternatives C and D would include restoration of the Olema Marsh, as well as Giacomini Ranch. The Olema Marsh restoration could have adverse impacts for red-legged frog over the short- and long-term. Over the short-term, the dramatic reduction in water levels within the currently impounded marsh would cause

extensive die-back of vegetation and temporary water quality problems, thereby appreciably decreasing the marsh's suitability as breeding habitat. As the marsh readjusts to changed conditions, however, Freshwater Marsh would reestablish, however, acreage would be reduced relative to existing conditions, with conversion of approximately 10 – 20 acres to Muted Tidal Brackish Marsh because of increased tidal influence. Some of these impacts to red-legged frog would be offset by creation of approximately 2 acres of freshwater ponds in the adjacent Olema Creek watershed less than 0.5 miles from Olema Marsh.

Over the long-term, conditions for red-legged frog would continue to improve as the Tomasini Triangle freshwater Marsh and Olema Creek ponds continue maturing into established marsh. (Under Alternative D, the Tomasini Triangle freshwater marsh would be slightly reduced from 5.4 to 5.2 acres.) These mitigation measures, along with other proposed habitat enhancement and creation efforts in the Seashore-owned and managed-portions of the Point Reyes Peninsula Core Area, would reduce effects of Alternatives C and D over the long-term from moderate to minor. Construction impacts, using standard BMPs, would result in negligible (No Action and Alternative A) to minor (Alternatives B – D) adverse impacts.

Tidewater goby

Until 2002, tidewater goby, a small estuarine fish species found in only a few remaining coastal watersheds in California, had not been seen in the Tomales Bay watershed since 1953. During baseline studies, however, a small population was found in the Giacomini Ranch portion of Tomasini Creek. Since then, the species has been observed in two other areas: the West Pasture Old Slough and the East Pasture Old Slough Pond. Numbers of tidewater goby have been relatively low within these areas, ranging from five to 22 at most (Fong 2002; NPS, unpub. data). Genetic analyses indicate that this population is genetically distinct from the nearest existing occurrences of tidewater goby at Salmon Creek Marsh and Rodeo Lagoon (Jacobs and Earl 2005).

In general, the proposed project would benefit this estuarine species, with long-term effects ranging from moderate (No Action and Alternative A) to major (Alternatives B-D). These long-term benefits would result from gradual conversion of Pasture-Grassland to tidal and brackish marsh and maturation of created or naturally developing tidal creek channels within the Giacomini Ranch. In all cases, alternatives would result in expansion of tidal slough and channel habitat, allowing for brackish, low energy areas to become established. Increased hydraulic connectivity and tidal influence would also increase the potential for tidewater goby to establish in Olema Marsh. Under all alternatives, the Park Service would work with the U.S. Geological Survey (USGS) and the USFWS to conduct a captive propagation and relocation project in which these agencies would work to expand the extent of goby occurrences within the Project Area and/or southern Tomales Bay watershed.

There may be adverse effects during construction and over the short-term, because of the combination of direct impacts to existing habitat during and following construction and the fact that restored habitats would take time to establish. Under all the alternatives, the East Pasture Old Slough Pond would be hydrologically reconnected to Lagunitas Creek. Under Alternatives B – D, the West Pasture Old Slough would be hydrologically reconnected to undiked areas through removal of the Fish Hatchery creek tidegate and breaching or removal of levees. Under Alternatives C-D, Tomasini Creek would be partially or wholly realigned, respectively, into one of its historic channel alignments. Because creek realignment affects the primary population of tidewater goby in the Project Area, construction-related impacts under these alternatives are considered moderate adverse.

However, some of the direct impacts to existing habitat would be avoided by retaining the tidegate and flashboard dam structure on Tomasini Creek for at least 10- 20 years. This structure would continue to allow the full upper range of high tides into the current Tomasini Creek channel, but would truncate the lower range, maintaining subtidal or ponded almost lagoon-type conditions. Despite being almost fully tidal, salinities within this reach remain brackish even when creek flow is intermittent, because the water regime is highly influenced by seeps and groundwater flow from the Point Reyes Mesa. Under Alternatives C-D, where the Tomasini Creek is partially or wholly realigned, this created channel would be maintained as a backwater slough feature. Through the combination of the broodstock program and the dramatic expansion of habitat, all project alternatives are expected to provide some level of benefit over the long-term to the tidewater goby and its habitat.

Central California Coast Steelhead, Coastal California Chinook Salmon, and Central California Coast Coho Salmon

Three federally protected salmonids occur within the Lagunitas Creek watershed: steelhead (*Oncorhynchus mykiss*), chinook salmon (*O. tshawytscha*), and coho salmon (*O. kisutch*). The Lagunitas Creek watershed, including Olema Creek, is believed to support 10 to as much as 20 percent of the Central California Evolutionarily Significant Unit (CCESU) coho population (Brown et al. 1994, NPS, unpub. data).

While many salmonid projects are focused upstream on fish passage, habitat, and structure, the Project Area does not represent a potential breeding or spawning area for steelhead, coho or Chinook salmon. These types of salmonids typically breed in the upper portions of the watershed in medium- to high-gradient tributaries. The Project Area does represent estuarine feeding habitat for outmigrating smolts, as well as a staging area for adults as they migrate upstream for spawning. However, currently, levees, culverts, and tidegates on Lagunitas, Bear Valley, Fish Hatchery, and Tomasini Creeks constrain opportunities for foraging and refugia within -- as well as migration through -- the Project Area.

All action alternatives would benefit salmonid species by dramatically increasing access to potential foraging and refugia habitat. Removal of dairy infrastructure, ditches, and other materials would improve localized water quality conditions and decrease disturbance of existing aquatic habitats. Beginning with Alternative B, the proposed project would also include removal or replacement of fish passage impediments or barriers to watersheds through eliminating the tidegate on Fish Hatchery Creek (Alternatives B-D), realigning Tomasini Creek to avoid the tidegate and flashboard dam on the current channel (Alternatives C - D), replacing the Tomasini Creek culvert at Mesa Road (Alternative D), and potentially replacing culverts on Bear Valley Creek at Levee Road and/or Bear Valley Road (Alternatives C - D). Benefits for salmonid passage and rearing conditions resulting from these restoration actions would be expected to be negligible under the No Action Alternative, minor for Alternative A, moderate for Alternatives B, and major for Alternatives C-D.

In addition to rearing and passage conditions, the amount of tidal marsh available for feeding by salmonids during the 1-2 month outmigration period is important. Long-term survival of smolts is tied to their size at outmigration. Increased the amount of area available for feeding would benefit salmonids leaving Lagunitas Creek, Olema Creek, and Bear Valley Creek, potentially enhancing their chances of survival. For Alternatives A - D, restoration would involve increasing amounts of levee, culvert, and tidegate removal, as well as creation of tidal channels, to convey flow into the interior portions of the Giacomini Ranch and Olema Marsh. Over the short-term, restoration actions would result in negligible (3 percent; No Action Alternative) to moderate increases (31 percent; Alternatives C and D) in the amount of tidal channel perimeter or total aquatic edge available for salmonids. However, as restored marshes and created tidal channels mature, benefits to salmonids would increase over the long-term, with moderate beneficial effects expected under Alternatives A and B and major beneficial effects, under Alternatives C and D. Impacts during construction would be negligible due to incorporation of standard Best Management Practices (BMPs) to limit adverse effects on creeks and other water bodies potentially supporting salmonids.

California Black Rail and California Clapper Rail

Early in the 20th century, California black rails (ST) were apparently very common in the tidal marshes near Point Reyes Station, and California clapper rails (FE, SE) also reportedly occurred in Tomales Bay (Grinnell and Miller 1944). However, these species have been negatively impacted by large-scale habitat loss of coastal wetlands in California, as well as local losses of wetlands in Tomales Bay.

In 1994, the undiked marsh north of the Giacomini Ranch support at least seven pairs of breeding California black rails (Evens and Page 1986; Evens and Nur 2002), and black rails have also been detected intermittently in Olema and Bear Valley Marshes (ARA 2002). There is no recent information on the number of breeding pairs of black rails, although numbers have possibly decreased (J. Evens, ARA, *pers. comm.*). Clapper rails are even less common in Tomales Bay. Clapper rail individuals were sighted for several years in the undiked marsh north of the Giacomini Ranch between 1995 and 2001 (J. Evens, R. Stallcup, unpub. field notes). However, there are no recent breeding records for this species in Tomales Bay (ARA 2002).

The proposed project has opportunities to expand breeding and foraging habitat for rails with breaching or removal of levees, expansion of tidal and brackish marsh habitats, and potentially a decrease in water impoundment within Olema Marsh. Over the short-term, these changes would result in negligible beneficial effects on rails, because vegetation communities would be in a transitional phase marked by extensive vegetation dieback and temporary establishment by weedy, opportunistic species. However, over the long-

term, establishment or reestablishment of Tidal Salt Marsh and Tidal Brackish Marsh would benefit rails, with effects ranging from minor under the No Action Alternative (~11 acres) to major under Alternatives A-D (~250 to 350 acres). Construction would have the potential to have negligible (No Action and Alternative A) to moderate (Alternatives B-D) adverse effects on rails, although standard construction BMPs involving pre-construction and delays of construction near breeding habitat during the spring and summer would be observed.

In addition to breeding and foraging habitat, another important habitat for rails is high tide refugia, which is typically higher elevation upland or upland ecotone areas. Currently, rails near the Giacomini Ranch use the levee system as refugia. Under all alternatives, some portion of levees would be retained both in the West and East Pasture for high tide refugia. While levee loss could be perceived as adverse, the quality of the levees as refugia could be considered somewhat reduced relative to optimal refugia conditions, because vegetation cover is somewhat poor, and use of the existing informal path by birdwatchers during extreme high tides increases disturbance. In 2006, the Park Service conducted an enhancement project to widen and improve habitat conditions along one section of the West Pasture levee near the undiked marsh, the rail's existing habitat. The Tomasini Creek levee would also remain, providing refugia for rails possibly establishing in the East Pasture. Upland areas would also exist along the Project Area perimeter and in the southern portions of the two pastures: these southern upland areas would become more viable as refugia habitat with discontinuation of agricultural management and expansion of marsh habitat southward into the interior of the two pastures.

Other Special Status Species

Most of the other federally and state-listed endangered and threatened species are only occasional visitors or vagrants to the Project Area, with the exception of peregrine falcon, a state endangered species and federally delisted species that has been regularly observed foraging over the Project Area.

Species analyzed include California freshwater shrimp (*Syncaris pacifica*, FE; common upstream in freshwater portions of Lagunitas Creek, rare in Project Area); California brown pelican (*Pelicanus occidentalis californicus*, FE; foraging on Lagunitas Creek shoreline); Least Bell's vireo (*Vireo bellii pusillus*, FE, SE; extremely rare vagrant in riparian habitat); green sturgeon (*Acipenser medirostris*, FT; forages rarely in Lagunitas Creek); peregrine falcon (*Falco peregrinus*, SE, FD; regularly observed foraging over the Giacomini Ranch and undiked marsh); sandhill crane (*Grus canadensis*, ST; very rare visitor to wet pastures in Giacomini Ranch); and bank swallow (*Riparia riparia*, ST; rare transient over Giacomini Ranch in fall). In addition, analysis also includes species that are not federally or state-listed as endangered or threatened, but that are listed as species of concern by the regional USFWS office (FWSSacSC) and are known to occur in the Project Area. These species include: northwestern pond turtle (*Clemmys marmorata marmorata*, FWSSacSC), southwestern river otter (*Lontra canadensis sonora*, FWSSacSC), and saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*, FWSSacSC).

The impacts of restoration and/or public access actions would vary depending upon the species. Most species would experience negligible to minor adverse effects during construction due to noise and habitat disturbances caused directly and indirectly by earthmoving activities. The northwestern pond turtle would suffer moderate adverse impacts as the pasture ditches and freshwater areas they currently use are filled or converted into brackish or saline creeks through reintroduction of tides. Saltmarsh common yellowthroat, which breeds in riparian habitat along the Project Area perimeter, could be adversely impacted by permanent or temporary removal of riparian habitat for construction of the eastern perimeter trail, southern perimeter trail, and the possible future extension of the southern perimeter trail to Inverness Park. Impacts would be reduced under Alternatives C and D, because there is no through-trail component on the eastern and/or southern perimeter. One species that could actually benefit from construction would be the peregrine falcon, which would likely find greater prey availability during this period due to ground disturbance.

Over the short- and long-term, discontinuation of agricultural management practices such as levee maintenance, freshwater diversions, operation of tidegates, ditching, and grazing would negligibly benefit a number of species, including saltmarsh common yellowthroat, southwestern river otter, California brown pelican, green sturgeon, and Least Bell's vireo. In general, the California freshwater shrimp would benefit under the No Action Alternative and Alternatives A and B from the discontinuation of agricultural management such as levee maintenance and diversion of Lagunitas Creek water from irrigation. However, under Alternatives C and D, there would potentially be a minor adverse effect on shrimp due to increased salinities in Lagunitas Creek and Olema Marsh from improving hydraulic connectivity between Olema Marsh and Lagunitas Creek.

In addition, under most action alternatives, negligible to moderate adverse effects would be expected over the long-term for certain freshwater- and grassland-associated special status species. While “flushing” of voles and other rodents may benefit the American peregrine falcon during construction, over the long-term, loss of grassland habitat would reduce rodent numbers and have a negligible adverse effect on this raptor. Species such as sandhill crane and bank swallow may also respond negatively to grassland conversion.

Cultural Resources

Since the early 1900s, a number of laws and policies have been enacted to protect cultural resources. These laws require project proponents to evaluate impacts of proposed projects to archaeological and historic structure resources. Surveys of the Giacomini Ranch in 2002 identified two previously unrecorded cultural landscape features: a portion of the North Pacific Coast Railroad grade (ASC-69/01-01) and a historic-period levee system and dam (ASC-69/01-02; Newland 2003). The dam was a temporary gravel dam that the Giacomini installed each summer to provide freshwater for irrigation purposes, however, installation was discontinued in 1998 prior to selling the property to the Park Service. While the original levee system was constructed more than 50 years ago, frequent repairs and reinforcement (e.g., rip-rap) has reduces its value as a historic resource (Mark Rudo, Park Service, *pers. comm.*). Neither resource was eligible for listing on the National Register of Historic Places (Newland 2003). In 2004, four additional landscape features were recorded by Garcia and Associates (2004): two manure lagoons and two corrals in the main complex. The corrals are not on Park Service property. None of these features was considered eligible for National Register of Historic Places listing (Garcia and Associates 2004).

Overall, all action alternatives would result in minor adverse impacts to cultural resources associated with activities affecting the recorded landscape features (e.g. manure lagoons and corrals). None of the features recorded was deemed eligible for listing in the National Register of Historic Places, so the proposed project would have no impacts on historic properties. In terms of cultural landscape features, under Alternatives A-D, the manure lagoons would be filled, and some or all of the levees would removed, with the amount of levee removal increasing under each of the alternatives. The portion of the North Pacific Coast Railroad grade in the Project Area would be used for the eastern perimeter through-trail under Alternatives A and B and one or more spur trails under Alternatives C and D: construction of these trails would not be anticipated to compromise the integrity of this feature.

Public Health and Safety – Flooding

Flood-related federal and local regulations focus on reducing both the exposure of communities and parks to damaging flooding and the funds required to rebuild communities and parks following such major floods (Clearwater Hydrology and Nichols-Berman 2002). The National Flood Insurance Act of 1968 and the Flood Disaster Prevention Act of 1973 established the National Flood Insurance Program (NFIP) for insuring properties in designated 100- and 500-year flood zones (Clearwater Hydrology and Nichols Berman 2002). Situated in an alluvial valley at the confluence of a number of small to large-sized creeks, the entire Project Area falls within a designated 100-year flood hazard zone (Clearwater Hydrology and Nichols-Berman 2002). Over the last century, a number of catastrophic floods and rainfall-induced landslides have caused extensive damage to homes, ranches, and roads in west Marin. The largest recorded flood in the Project Area and vicinity was the 1982 storm, a 100-year flood event that triggered 18,000 slides, damaged 100 homes, and killed 14 people (Ellen et al. 1988).

Computer hydraulic modeling (KHE 2006a) and topographic information (USGS 2003b) were used to evaluate the potential for any increases in flooding of structures or decreases in the ability of residents to leave homes due to flooding of driveways or roads or the ability of emergency personnel to reach residents needing emergency services. The analysis focused on changes in vertical flood elevations or flood height for the 2- to 100-year flood events. Changes in vertical flood elevation and associated risk to public health and safety were analyzed for three separate areas within or adjacent to the Project Area that are prone to flooding: 1) East Levee Road and properties and homes along Levee Road; 2) West Levee Road adjacent to White House Pool County Park and Olema Marsh, and 3) Sir Francis Drake Boulevard in Inverness Park and properties and homes on the east side of the road contiguous with the Giacomini Ranch West Pasture.

Hydrologic investigations and modeling conducted as part of baseline studies indicate that the height of the Giacomini Ranch East Pasture levees east of the Old Summer Dam locations is higher than the opposite creek bank where the Levee Road homes are located (KHE 2006a). This disparity in levee and creek bank height directs flood flows toward the homes (KHE 2006a). Properties on the eastern end of Levee Road, directly south of the Giacomini Ranch East Pasture, are frequently flooded by Lagunitas Creek. On average, flood

flows overtop the southern bank of Lagunitas Creek during 3-year flood events, while the Giacomini Ranch levee opposite Levee Road floods, on average, between 3.5-year and >10-year flood events (KHE 2006a). Levee breaching or removal would generally relieve flood pressure on Levee Road and Levee Road residences during the more frequent flood events. Under all flood scenarios (2-100 -year flood event), there would generally be a measurable or minor reduction in water level on the eastern, developed portion of Levee Road relative to baseline conditions. This reduction would not prevent flooding, but would result in reductions in water level or vertical flood elevations with respect to baseline conditions and increase public health and safety.

The undeveloped western portion of Levee Road adjacent to Olema Marsh is the lowest topographically and floods consistently during even low magnitude storms, resulting in frequent road closures. Levee Road serves as one of only two county roads that provide access to the communities of Inverness Park, Inverness, and the remainder of the Point Reyes Peninsula. The effects of the proposed project on the frequency of Levee Road closure would be substantial, with alternatives expected to reduce flooding by as much as 0.9 feet under certain flood events under Alternative A (moderate beneficial) to as much as 1.1 feet under certain flood events under Alternatives B-D (moderate/major beneficial). The southern perimeter trail would include a bridge across Lagunitas Creek at the general location of the former summer dam under Alternatives A – C. Because the bridge would be constructed to accommodate flows similar to the Green Bridge, it and other public access facilities would not be expected to impede flood flows or exacerbate flooding.

The four closest homes to the Project Area are those along Sir Francis Drake Boulevard that are contiguous with the Giacomini Ranch West Pasture. Hydraulic modeling suggests that, under the 2- to 100-year flood event scenarios, there would be no change from existing conditions under the No Action Alternative and Alternative A. Under existing conditions, the West Pasture levees keep Lagunitas Creek waters more than 1,000 feet to the east under flood events smaller than the 12-year event, at which point levees overtop. Hydraulic modeling indicate that the four residences on the east side of Sir Francis Drake Boulevard are not impacted by rising waters from Lagunitas Creek during any of the simulated flood events (5-, 10-, 50-, and 100-year), except for potentially the 500-year flood event (KHE 2006a). During large rainfall events, most properties are subject more to flooding from the smaller Inverness Ridge drainage that flow down the ridge and out into the West Pasture. These tributaries often deposit large amount of sediment that increase flood water stage or vertical flood elevation and cause back-up of floodwaters onto properties (KHE 2006a).

Starting with Alternative B, the frequency of flooding in the West Pasture would increase to 2-year flood events (KHE 2006a). Hydraulic modeling indicates that, under Alternative B, because levees in the southern portion of the pasture would not be completely removed, but outflow of waters would be increased by removal of the West Pasture north levee and Fish Hatchery Creek tidegate, vertical flood elevations in the West Pasture would decrease by as much as 0.4 feet under 2- to 10-year flood events (KHE 2006a). However, during 50-year flood events, vertical flood elevations would increase up to potentially 1.0 foot within the easternmost undeveloped portion of some of the private properties (KHE 2006a). Even with as much as a 1-foot increase in vertical flood elevation, homes, driveways, or access routes to roads would not be negatively affected. The four developed homes are at least 4- to 7 feet higher than the elevation of the West Pasture levee, because they have been built on alluvial fans or small hills created by episodic sediment deposition from Inverness Ridge creeks over time. Because of this, adverse changes to public health and safety under Alternative B during the 50-year flood event are characterized as minor.

Under Alternatives C -D, complete removal of levees could increase vertical flood elevations in the West Pasture by as much as 0.3 to 1.6 feet under the 2- to 50-year flood events (KHE 2006a). These increases in vertical flood elevation under the 2- to 50-year flood events would cause increased flooding of the lower portions of properties during the 10-year and 50-year flood events. The largest flooding increase would take place at the parcel directly adjacent to Fish Hatchery Creek during 50-year flood events, however, it would be restricted to the lower, undeveloped, marshy portions that would already be flooded under baseline conditions (KHE 2006a). A very small portion of the eastern perimeter of the northernmost properties could also be flooded, although fencing could limit floodwater intrusion to some degree. Because the maximum 1.6-foot increase in vertical flood elevation would not negatively affect homes, driveways, or access routes to roads, the adverse changes under Alternative C during the 50-year flood event were characterized as moderate.

One of the potential mitigation measures for reducing impacts to private properties would be to construct levee or berms on the property perimeter, particularly for some of the lower elevation homes or developed properties or portions of properties. However, levee construction would be complicated by the presence of the Inverness Ridge drainages, as levees could increase impoundment of waters westward of the levee. As discussed earlier, baseline studies point to the primary flood risk for many of these properties and portions of Sir Francis Drake Boulevard in Inverness Park being the drainages that flow off the Inverness Ridge.

Public Health and Safety – Disease and Public Health

One of the strongest concerns currently about wetlands and public health is the rapid spread of West Nile Virus. While the reservoir host for this virus is considered to be birds, it can be transmitted by mosquitoes. Unlike malaria and dengue fever, which is carried by only one type or genus of mosquito, several genera – a total of 44 species within all genera -- can carry West Nile, many of which also carry other mosquito-borne diseases, as well, including encephalitis and malaria. Because of concerns regarding West Nile, the western portion of Marin County was annexed into the Marin-Sonoma Mosquito and Vector Control District (District) in 2005.

Under baseline conditions, infrastructure (e.g., levees, culverts, tidegates) or management practices have increased potential mosquito breeding habitat in the Giacomini Ranch and Olema Marsh by 1) creating water impoundments that lead to stagnant water conditions; and 2) increasing the duration and extent of ponding or inundation.

All of the alternatives would have minor (No Action Alternative) to moderate (Alternatives A-D) beneficial effects on reducing populations and breeding habitats for mosquitoes. The No Action Alternative would eliminate agricultural management practices such as spray and flood irrigation, ditching, and other activities that could promote mosquitoes, while all of the action alternatives would involve varying degrees of infrastructure removal, including filling in of ditches and manure ponds, breaching and/or removal of levees, and tidegate removal. Also, new tidal channels would be created, thereby expanding tidal flooding and exchange through much of the East Pasture (Alternatives A-D) and West Pasture (Alternatives B-D).

Removal of agricultural management and restoration would also lead to a change in habitats. Some of the habitats with higher potential for providing optimal mosquito breeding conditions include muted tidal and non-tidal open water channels and ponds, as well as vegetated habitats, that are permanently, seasonally, or temporarily flooded. Through restoration, a large proportion of the Project Area would convert to Tidal Salt or Brackish Marsh habitats. Conditions in fully tidal systems are often less favorable for mosquito breeding, because strong tidal currents disrupt egg laying in channels and adjacent vegetated habitats that are inundated daily, as well as by providing habitat for the natural predators of mosquitoes and reducing flooding in areas that are not normally wet (IWCP 2001). In San Francisco Bay, full tidal action has been shown to decrease mosquito numbers by as much as 98.7 percent relative to either pre-restoration conditions (Kramer et al. 1995) or adjacent impounded marshes (Liu 2001). Within the Project Area, the extent of habitat with the highest potential for supporting breeding mosquitoes would decrease by 60 percent under Alternative A, 76 percent under Alternative B, and 80 percent under Alternatives C and D.

Portions of mid-marsh “zones” or marshplains or sluggish portions of tidal creeks that are not regularly inundated by tides, but receive infrequent tidal inundation, may continue to provide breeding habitat for mosquitoes, particularly saltmarsh mosquitoes such as *Ochlerotatus squamiger*. While *O. squamiger* is known to transmit certain strains of encephalitis, it is not a documented carrier of West Nile Virus. Overall, the proposed activities under all action alternatives would be expected to reduce numbers of mosquitoes that may act as disease vectors through reintroduction of tidal flushing, conversion of a significant portion of the Giacomini Ranch to Tidal Salt Marsh, and discontinuation of agricultural management practices such as ditching, irrigation, and maintenance of tidegates and manure ponds.

Public Services – Municipal Water Supply and Distribution

Federal and state regulations and policies protect both the supply and quality of drinking water for the public. The California Safe Drinking Water Act (CA SDWA) was passed to build on and strengthen the federal SDWA. In addition to strengthening primary standards through the CA SDWA, DHS has also set secondary drinking water standards and maximum contaminant levels for analytes or contaminants of lesser concern that affect the taste, odor, or appearance of drinking water such as salts or chlorides.

The Project Area is located within the North Marin Water District (NMWD) West Marin Service Territory. Within the West Marin area, NMWD services the towns of Point Reyes Station, Olema, Bear Valley, Inverness Park, and Paradise Ranch Estates. Currently, NMWD currently obtains its water supply for the West Marin service area from two wells located adjacent to Lagunitas Creek on the U.S. Coast Guard (USCG) property in Point Reyes Station. Freshwater flow on Lagunitas Creek, which flows through the Project Area, is largely controlled, by five dams operated by the Marin Municipal Water District (MMWD), which services most of the rest of eastern Marin County. NMWD has two other active wells that it has developed – the Downey Well and the Gallagher Well. Located upstream of the Coast Guard wells, the Downey Well is no longer used for

municipal water supply, although approximately 2 cfs water is pumped from this well during the summer to the Giacomini Ranch for irrigation purposes as part of NMWD's agreement with the Giacomini family.

Currently, the NMWD faces problems with occasional intrusion of salts or chlorides into the Coast Guard wells, although institution of management practices such as off-tide pumping have appeared to decrease frequency of these events. DHS has established secondary drinking water standards for chloride in potable water ~ 250 to 500 mg/L, however, NMWD has instituted stricter standards of 100 mg/L, which is often at the lower range of what people can discern by taste.

While there has been a considerable amount of study into the salinity intrusion problem, the exact cause or mechanisms by which salinities become elevated is still not totally understood. However, salinity intrusion appears to be controlled by a combination of factors, including tidal height, streamflow discharge, pumping rates, and possible influence from the adjacent terrace groundwater aquifer (KHE 2006a). Salinity intrusion events appear to correlate with low creek flows of less than 9-10 cfs; maximum well-pumping rates; and spring tides exceeding 5.5 - to 5.7 feet MLLW and often lag behind spring or high tide events by as much as 5- 7 days. While the exact location at which tidally and non-tidally influenced surface waters infiltrate into the alluvial aquifer is unknown, several factors --, including stratigraphy and creek bathymetry in the vicinity of the Coast Guard wells; predicted tide "thresholds" at which increases in groundwater salinity occur, and the consistent 5- to 7-day lag time between high tide- and intrusion events -- point to the infiltration location being some distance upstream from the Coast Guard wells (KHE 2006a).

Restoration and management actions that would most affect surface water salinities in the upper portion of Lagunitas Creek near the Coast Guard Well site would appear to be: 1) the proposed conversion of the Giacomini appropriative water right use dedication from irrigation to beneficial in-stream uses and 2) the proposed adaptive restoration component for Olema Marsh. Under all alternatives, the Park Service would dedicate the 2.0 cfs appropriative water right that it purchased and that the Giacomini have been using for irrigation of the East Pasture to beneficial instream uses, which would increase the amount of downstream freshwater flow by 20 percent during the summer and early fall months. Modeling (KHE 2006a) shows that discontinuation of irrigation under the No Action Alternative would reduce average salinity or chloride concentrations in the portion of Lagunitas Creek upstream of the Green Bridge by as much as 37 percent during spring or high tide conditions (predicted Inverness tides > 5.5 ft MLLW) relative to baseline conditions (KHE 2006a).

Alternatives A and B would result in a slightly lower percent reduction in average salinity or chloride concentrations during spring or high tide (predicted Inverness tides > 5.5 ft MLLW) and normal summer-fall streamflow (8 cfs) conditions. The percent reduction would be decreased to 14 percent (moderate beneficial), because the increase in hydrologically connected tidal marsh in the Giacomini Ranch would generally increase the tidal prism and, therefore, the salt mass or total volume of salts in the Project Area.

Average salinities during spring or high tide and normal streamflow conditions would actually increase by as much as 15 percent in upstream portions of Lagunitas Creek under Alternatives C-D. This increase in salinities appears to relate to the increase in tidal prism in Olema Marsh with restoration and exchange of tidally influenced or higher salinity waters between the marsh and Lagunitas Creek. While the potential tidal prism or volume of waters is much smaller in Olema Marsh than that of the Giacomini Ranch, the point at which these waters would be exchanged with Lagunitas Creek is much further upstream and located in a deeper, pooled section of Lagunitas Creek that potentially has greater exchange with reaches upstream of the Green Bridge. While salt concentrations may increase relative to existing conditions, Alternatives C and D would not increase the frequency or duration of events conveying saline waters upstream of the Green Bridge. Because the frequency would not change, the impacts of these alternatives to municipal water supply would be moderate. The Seashore would potentially conduct small-scale pilot projects with extensive monitoring or even delay implementation of the adaptive restoration component in Olema Marsh, while it continues to work with the NMWD to better characterize the factors affecting salinity intrusion events in the alluvial aquifer, as well as to pursue other opportunities to improve water supply reliability in the future.

Public Services - Traffic and Transportation

Most of the transportation routes within or directly adjacent to the Project Area are county roads, with the exception of State Route 1. The Marin County Congestion Management Agency (CMA) creates, updates, and administers a Congestion Management Plan (CMP) for all types of roadways within the county. The purpose of the CMP is to establish Levels of Service (LOS) for designated freeways, state highways, and local arterial

roads and to maintain those standards by increasing capacity or managing travel demand on those roads. The County has established a minimum LOS for urban and suburban arterials, including highways that serve as arterials such as State Route 1, as LOS D or better and LOS E or better for major highways and rural expressways, with LOS E being the most impacted or congested. Although standards for rural roads are not clearly specified, for the purposes of this analysis, Sir Francis Drake Boulevard (including Levee Road), Bear Valley Road, and Pierce Point Road would be interpreted as needing to meet LOS standards of D or better.

The proposed project could affect traffic by increasing the number of vehicles and trucks on local roadways not only during construction, but after construction through increases in visitation to the restored wetland. In 1998, BRW and Lee Engineering (1998) projected that, based on 1 percent annual growth in visitation and traffic, LOS would not change for Project Area roadways such as State Route 1, Sir Francis Drake Boulevard (Olema – Pierce Point Road), or Bear Valley Road between 1998 and 2010 (BRW and Lee Engineering 1998). However, since 1998, park visitation has actually declined, with visitor numbers 28 percent lower (or 761,415 fewer annual visitors) in 2005 than those projected by BRW and Lee Engineering. Because of this decline in park and regional visitation, most of the local and regional roadways appear to be operating at a LOS of B or C currently, an improvement since 1998 when several roads such as Bear Valley had high enough traffic levels to be rated as operating at a Level D LOS (BRW and Lee Engineering 1998). Based on this information, alternatives should be able to generate as many 2,504 additional daily visitors or 650 cars or vehicle trips (assuming 4-person occupancy) through 2010 without causing any change in LOS for roadways and/or causing a drop in LOS below LOS D, the county's minimum standard.

Most of the construction-related traffic effects would come from hauling of excavated sediment from the Project Area to local quarries. Truck traffic on local and regional roadways would result in negligible impacts under the No Action Alternative, negligible-minor impacts under Alternative A, minor impacts under Alternative B, and minor-moderate impacts under Alternatives C and D. The potentially most noticeable change in traffic patterns related to hauling would occur on Pierce Point Road on the Point Reyes Peninsula, although effects would still be characterized as minor. Temporary road closures under Alternatives C and D during culvert replacement activities could cause moderate impacts on two roads (Levee and Bear Valley Roads) that are important arterial or access routes for residents, visitors, and Park Service staff on the Point Reyes Peninsula.

Increases in visitation to the restored wetland could alter local traffic patterns and parking demand. The No Action Alternative would have only a negligible effect on traffic and parking demand in the local community, because there would be no construction or enhancement of public access facilities and only very minimal wetland restoration. Alternatives A – C would also generally have negligible effects on traffic in the local community, although impacts within specific areas such as the western portion of Point Reyes Station near C Street and Mesa Road in the Point Reyes Mesa area would be characterized as minor due to the presence of trailheads in these areas.

Under Alternatives A and B, the existing trailhead for the Giacomini Ranch East Pasture informal trail near 3rd and C Streets in Point Reyes Station would be retained and incorporated into the southern perimeter trail, but visitor and resident trail use and associated traffic and parking demand would be expected to increase relative to existing or baseline conditions, resulting in measurable effects on traffic and potentially appreciable effects on parking demand in this and other areas in Point Reyes Station. The recently updated Point Reyes Station Community Plan (Marin County Community Development Agency 2000) focused on the lack of off-street parking in Point Reyes Station as a concern, given the steady increase in numbers of visitors and area residents. Off-street parking would be available at the western end of the southern perimeter trail at the White House Pool County Park lot (approximately 43 parking spaces). Under Alternative C, the Point Reyes Station trailhead location for the southern perimeter through trail would be relocated to near the Green Bridge, although there would still be a trailhead off of Mesa Road for the Mesa Road spur trail. Under Alternative D, impacts on traffic and parking demand would be reduced to negligible, because of considerable scaling back of public access facilities (e.g., elimination of through-trail component on southern perimeter) and elimination of trailhead locations at 3rd and C Streets and on Mesa Road.

The through-trail components in Alternatives A, B, and C would result in minor to moderate beneficial effects on alternative modes of transportation. The Point Reyes Station Community Plan (2000) supports efforts to reduce congestion through alternative transportation, including efforts to identify appropriate locations for paths that could be used for both bicycle commuting and recreation, including investigations into the feasibility of using the abandoned railroad right-of-way. Under Alternatives A-C, the southern perimeter trail would provide a more direct connection between the western and eastern sides of Tomales Bay with a bridge between White House Pool County park and the Giacomini Ranch East Pasture. These alternatives also incorporate the potential for future collaboration with the county on a possible extension of the southern

perimeter trail to Inverness Park at a later time, once technical problems regarding road deterioration have been addressed. The eastern perimeter trail would provide connected access from Point Reyes Station north to State Route 1 under Alternatives A-B, but would not provide through access under Alternatives C-D. Because of this, Alternatives A and B would offer more appreciable benefits (moderate beneficial) for alternative transportation opportunities than Alternative C (minor beneficial). Alternative D would have even fewer benefits (negligible beneficial), because neither the eastern or southern perimeter spur trails proposed would connect through to Point Reyes Station.

Visitor and Resident Experience – Public Access Resources

For the Park Service, “providing opportunities for appropriate public enjoyment is an important part of the Service’s mission” (NPS 2006, Section 8.1). From the Park Service perspective, public education and enjoyment can be integral components of the wetland restoration process such that it can enhance “natural wetland values by using them for educational, recreational, scientific, and similar purposes that do not disrupt wetland functions” (NPS 2006, Section 4.6.5). In terms of public access resources, the proposed project can either benefit or impact public access resources by constructing new trails and facilities or enhancing or eliminating existing ones. Construction also has the potential to temporarily affect the visitor and resident experience by limiting or increasing the difficulty of access to public access facilities in the Project Area and other areas of the park and by disrupting the subjective quality of the visitor and resident experience.

Less earthmoving and a shorter construction period under the No Action Alternative and Alternatives A-B would mean fewer potential impacts to visitors and residents in terms of accessing existing public access facilities or disrupting the subjective quality of the visitor or resident experience than under Alternatives C-D. In addition, under Alternatives C and D, temporary road closures on important arterial roads such as Levee and Bear Valley Roads associated with restoration of Olema Marsh could increase impacts to visitors and residents, because these roads provide access to public access facilities on the Point Reyes Peninsula such as the Lighthouse, Tomales Point, and Drakes Estero. Overall, construction-related impacts on visitor and resident resources would be minor under Alternatives A and B and moderate under Alternatives C and D. The small 11-acre wetland restoration or mitigation component under the No Action Alternative would be expected to have only a barely detectable (negligible) construction-related effect.

Following project implementation, Alternatives A and B would have more extensive public access facilities and attractions/uses that would be a major or substantial benefit to visitors and residents. There would be two through-trails. The southern perimeter through-trail would connect from 3rd and C Street in Point Reyes Station to the White House Pool County park via a non-vehicular bridge over Lagunitas Creek. There would be the potential for this trail to be extended to Inverness Park in the future in a collaborative project with the county, once technical problems with road deterioration have been addressed. The eastern perimeter through-trail would connect from Mesa Road, where a small parking lot (~4-5 cars) would be constructed, to the existing Tomales Bay Trail on the Martinelli Ranch. Under Alternative A, this trail would be constructed as an earthen berm with culverts to convey groundwater flows from the Point Reyes Mesa, while under Alternative B, the berm would be replaced with a low-elevation boardwalk that would be coated with a material designed to increase traction for horses.

Under Alternative A, the existing informal trail on the West Pasture north levee would be retained, but under Alternative B, it would be eliminated. Elimination of this trail would result in some impacts to public access resources, particularly for birdwatchers that intermittently use the levee during the winter to view rare bird species such as California black rails. These impacts would be expected to be negligible to minor overall and would be offset slightly by construction of a viewing area near the existing road pull-out and the fact that maintenance of a trail in this location was incompatible with protection of special status species. Additional viewing areas and overlooks, as well as interpretative exhibits, would be constructed near the Giacomini dairy facility, the Giacomini Hunt Lodge off Mesa Road, and at the terminus of the Tomales Bay Trail under Alternatives A-C. The portion of the southern perimeter trail from the 3rd and C Street trailhead in Point Reyes Station to the viewing area at the Giacomini dairy facility would be constructed to be ADA-compliant and would provide opportunities for those with physical disabilities to also experience and enjoy the restored wetland. In general, the two through-trails would serve hikers, equestrians, and bicyclists, although use of the existing informal path at the West Pasture north levee would continue to be limited to hikers under Alternative A.

Alternative C would provide moderate benefits for public access resources, although there would be slightly fewer trails and facilities. It would still include the southern perimeter through-trail between Point Reyes Station and White House Pool County park with the possibility for a future extension to Inverness Park through

a collaborative project with the county. However, the Point Reyes Station trailhead would be relocated from 3rd and C Street to near the Green Bridge, where access for hikers, equestrians, and bicyclists would be improved. The eastern perimeter trail would be converted under Alternative C from a through-trail to two spur trails. One spur trail would extend the existing Tomales Bay Trail southward several hundred feet along the railroad grade to allow for viewing opportunities of the restored wetland and an existing shallowly flooded flat that attracts considerable numbers of waterbirds in the winter. The other would originate near the small parking lot at Mesa Road and would lead to the viewing area near the Giacomini Hunt Lodge. Under Alternative C, the ADA-compliant access component would be switched from the southern perimeter trail to the Mesa Road spur trail, which would be improved to meet Outdoor Recreational ADA standards. Combined with the Giacomini Hunt Lodge viewing area, this ADA-compliant trail would also allow those with physical disabilities to experience and enjoy the restored wetland. Both the southern and eastern perimeter trails would be open to hikers, equestrians, and bicyclists, although use by equestrians and bicyclists would be probably be reduced along the eastern perimeter due to elimination of the through-trail component.

Alternative D would provide the fewest improvements in public access resources relative to the other action alternatives. The southern perimeter trail would be converted from a through-trail to an enhanced or improved spur trail that would be accessed from Point Reyes Station by a trailhead near the Green Bridge. On the eastern perimeter, the number of spur trails would be reduced to one, which would extend the Tomales Bay Trail slightly southward. There would be no ADA-compliant access, and the number of viewing areas and overlooks would be reduced to three (West Pasture north levee, Giacomini dairy facility, Tomales Bay Trail terminus). These spur trails would continue to be open to hikers, bicyclists, and equestrians, although use by bicyclists and equestrians would be reduced relative to Alternatives A-B because of the lack of a through-trail component.

Visitor and Resident Experience—Visual Resources and Viewsheds

In addition to active recreational, visitors and residents can experience the beauty of national parks and undeveloped areas through viewsheds or aesthetically pleasing vistas.

Viewsheds in the Project Area include both low-elevation viewpoints along roads and trails, as well as higher elevation ones on the Point Reyes Mesa and Inverness Ridge, which include many rural residential developments. Motorists can catch glimpses of the southern and northern portions of Olema Marsh on Bear Valley Road and Levee Road, respectively, and of the western portion of the Giacomini Ranch along portions of Sir Francis Drake Boulevard. Groundwater and small creeks along the base of the Inverness Ridge have promoted growth of stands of riparian scrub-shrub and forest (see Vegetation Resources) that obscure portions of the pasture from vehicular, pedestrian, and cyclist passers-by on Sir Francis Drake Boulevard and along other areas of the perimeter. The lower elevation White House Pool County Park trail and the two Giacomini Ranch informal paths offer more constrained views of Lagunitas Creek, pastoral areas with cows, riparian habitat, the forested Inverness Ridge, the heavily vegetated Point Reyes Mesa bluff, and/or undiked marshlands. Views from the town of Point Reyes Station are reduced by the presence of the dairy facility buildings and barns, some of which are quite tall. Views from town primarily consist of pastures, grazing cattle, and the heavily forested Inverness Ridge.

Over the long-term, the proposed project would remove somewhat unsightly agricultural infrastructure that disrupts the integrity and unity of the existing Pastoral Landscape and restore a more Natural Landscape within the Project Area. Construction would temporarily adversely affect visual resources through the presence of earthmoving equipment, earthmoving activities, and spoil and equipment piles, with the intensity and degree of impact related to the areal extent and intensity of earthmoving activities and the number of viewsheds affected. During construction, impacts to visual resources would range from negligible adverse under the No Action Alternative because of construction of the 11-acre wetland mitigation component in the very northern end of the East Pasture to moderate adverse for Alternatives B – D because the restoration component would involve both the entire East and West Pastures, as well as Olema Marsh under Alternatives C and D.

After construction, the Project Area would go through a short-term transitional, ruderal phase as the Giacomini Ranch and Olema Marsh adapt to changed conditions. In the Giacomini Ranch, pastures would respond to the absence or decreased intensity of grazing, discontinuation of agricultural management, and elevated soil nutrient levels through a shift to plant communities dominated by weedier, more opportunistic plant species, as well as an overall increase in plant biomass or height of vegetation. Under Alternatives A – D, portions subject to tidal flooding would begin to convert from pasture to marsh, leading to establishment of a more Natural Landscape. Under the No Action Alternative and Alternatives A – B, Olema Marsh would

continue its current, somewhat visually subtle trend of conversion of fringing riparian habitat to freshwater marsh as surface water levels continue increasing. However, under Alternatives C and D, in which Olema Marsh would be restored through an improvement in hydraulic connectivity, extensive vegetation dieback would be expected to occur in the marsh in response to dramatic changes in water levels, topographic elevations, soils, and soil and water chemistry. Ultimately, these short-term, transitional changes would result in minor adverse impacts under the No Action Alternative and Alternatives A – B and moderate adverse impacts under Alternatives C – D.

Over the long term, all action alternatives would be expected to have a moderate beneficial effect through conversion of heavily managed agricultural lands or Pastoral Landscapes to Natural Landscapes characterized by a much wider diversity of wetland habitats and wildlife species. Beneficial effects would be only minor under the No Action Alternative, because there would be less active restoration. However, over time, ruderal vegetation that would establish over the short-term would probably convert to a more natural grassland vegetation community with less weeds and lower vegetation height once nutrient levels decreased to levels more characteristic of ungrazed or lightly grazed systems.

Socioeconomics

The Seashore is one of the 30 most visited parks in the National Park system. It is a destination park for national and international visitors, as well as a regularly visited resource for the 5 million residents of the nine counties that comprise the greater San Francisco Bay Area. Visitation to the park is approximately 2.5 million annually and is unusually consistent year-round, averaging roughly 200,000 visitors monthly. Marin County has a \$500 million annual tourist industry, and it is estimated that the Seashore contributes more than \$80 million to the regional economy visitor expenditures on dining, fuel, gifts, groceries, and lodging (NPS 2002). Total visitor spending was \$87 million in 2000 or \$80 million excluding local visitors (Michigan State University 2001). This spending of visitors from outside the local region generates \$69 million in sales by local tourism businesses, yielding \$25.6 million in direct income and supporting 1,100 jobs. Including secondary effects, the total economic impact of the park on the local economy is \$113 million in sales, \$42 million in wages and salaries, and 1,800 jobs (Michigan State University 2001).

The proposed project would have the potential to adversely affect socioeconomic conditions in the local community during construction, if construction-related impacts such as traffic delays or noise reduce visitation to the Project Area and other portions of the Seashore or local community. Over the long-term, beneficial effects would generally be expected from the slight increase in visitation to the restored wetlands and to the constructed and improved public access facilities under Alternatives A – D, although the increase in numbers would be low enough that only a barely measurable or minor effect would be expected on the local and regional economy.

Park Management and Operations

Planning and other activities conducted for the proposed project to date have been almost exclusively funded out of non-Park Service monies. The wetland restoration component has received funding from CalTrans, SS Cape Mohican oil spill settlement funds, and at least two private grant sources (Gordon and Betty Moore Foundation, National Fish and Wildlife Foundation). This funding has covered expenses of from one to two term FTE employees and occasional seasonal hires involved in planning and overseeing the proposed project. Since acquisition of the property, annual expenditures for the project, including personnel, monitoring, some property maintenance, and contracting for baseline studies including hydrodynamic modeling, ranged from \$132,026 to \$277,833 annually through September 2005. Personnel costs incorporated most of the environmental compliance activities for the proposed project, as well as a substantial amount of the vegetation and wetland-related baseline studies.

The proposed project has received some federal funds and support. Federal monies used for the proposed project came from \$1.55 million in Congressional appropriations used to purchase the Giacomini Ranch and two competitive grant programs (Conservation Challenge Initiative and Park Service-USGS). Permanent base-funded Seashore staff have assisted with administration of the project, such as contracting, payroll, benefits administration, personnel, and maintenance associated with immediate operations and maintenance needs. On an annual basis, it is estimated that, on average, permanent, base-funded staff contribute less than 25 FTE days each year to the proposed project. Because the Giacomini Ranch currently has no park facilities, maintenance is not performed by Park staff, except for flood-related maintenance activities. Because the Giacomini continue to operate the Giacomini Ranch, existing informal social paths are not currently maintained by the Seashore.

While construction costs for restoration would be funded by private monies, the proposed project has the potential to have a negligible adverse effect on park management and operations following construction through expenditures related to administrative costs and long-term operations and maintenance or life-cycle costs. Most of the long-term park operations costs would be associated with the public access facilities, as the restoration component of the proposed project has been designed specifically to not require future maintenance actions to complete or expand restoration in the future (with the exception of the adaptive restoration component in Olema Marsh). Overall, lifecycle costs to maintain the public access facilities identified as part of all action alternatives are not anticipated to exceed \$50,000 or 1 percent of the annual park operating budget. It should be noted that overall costs may rise with inflation, but general level of effort is not anticipated to exceed these projected levels.

Other Impact Analyses Mandated by DO-12 and CEQA

Relationship between Short-Term Uses of the Environment and Maintenance and Enhancement of Long-Term Productivity

The Giacomini Ranch was established through diking of a historic salt marsh in 1946. Running of a viable dairy in this location has required substantial investments in terms of maintenance of levees, tidegates, culverts, ditches, and irrigation that would have made continued operation of this dairy in the future economically tenuous, if not infeasible, particularly in view of the current market dynamics in California, in which large Central Valley dairies are threatening the viability of smaller operations such as those in west Marin. While dairy operation has not eliminated wetlands from the Giacomini Ranch, it has reduced functionality of these wetlands by disconnecting them from hydrologic sources such as Lagunitas and Tomasini Creek through levees, tidegates, and culverts and introducing new sources of contamination from intensive grazing, manure spreading, and other agricultural management practices. Viewed from this perspective, the dairy represents a short-term use of the environment that has impacted long-term productivity of natural resources within the Tomales Bay watershed.

Each of the action alternatives (A-D) would enhance long-term productivity of natural resources in the Tomales Bay watershed, with the intensity of enhancement related to the increasing scale of restoration proposed under each of the various alternatives. Under all action alternatives, the closure of an operating dairy and restoration of natural hydrologic and ecological process to the Project Area would only enhance long-term environmental protection and productivity.

Avoidable and Unavoidable Major or Significant Adverse Impacts

There would be no unavoidable significant adverse impacts from construction or implementation of any of the alternatives, including the No Action Alternative.

The No Action Alternative would also have no avoidable significant adverse impacts. Alternative A would have only one potentially major adverse impact that would be considered substantial and significant under CEQA and major under NEPA – exceedance of maximum noise levels for certain sensitive receptors that are directly adjacent to the Project Area during construction. This impact would be mitigated to less than significant under CEQA and moderate under NEPA using mitigation measures that are considered standard construction Best Management Practices (BMPs) for reducing impacts of construction noise to sensitive receptors.

In addition to noise, Alternatives B, C, and D could have one other potentially major adverse impact that would be considered substantial and significant under CEQA and major under NEPA – exceedance of BAAQMD air quality criteria for NOX emissions during construction. These air quality impacts would be associated with operation of construction equipment during the more intensive construction phase in the East Pasture and not with construction in the West Pasture or Olema Marsh. As with noise, the air quality impact was mitigated to less than significant levels under CEQA and moderate intensity under NEPA using mitigation measures recommended by BAAQMD to reduce NOX emissions.

While these mitigation measures are believed to be effective enough to reduce these impacts to less than significant, if their effectiveness is reduced, these impacts could become unavoidable significant adverse

impacts. Over the long-term, however, both of these impacts are very temporary and related only to construction, which lessens their severity relative to short-term or long-term permanent impacts.

Growth-Inducing Impacts

None of the alternatives would be expected to have growth-inducing impacts. They would not affect any public services such as power, water, sewer, roads, schools, hospitals, and other facilities and services or would not affect them in such a way that would induce growth in the local community or west Marin region. Under the terms of the purchase agreement with the Giacomini Trust, the 7-year Reservation of Use Agreement that has allowed the Giacomini family to continue to operate the dairy since its purchase by the Park Service in 2000 will expire in March 2007, and the dairy will close. Closure of the dairy will occur under all alternatives. Discontinuation of intensive dairying operations could increase the attractiveness for future development of parcels that are already zoned for commercial or residential development along C Street in Point Reyes Station or along Sir Francis Drake Boulevard in Point Reyes Station, however, this factor would be common to all alternatives and would not necessarily be related to the proposed project.

Because the Giacomini Ranch may continue to be grazed to some degree or, if grazing is not authorized, allowed to become fallow grasslands, the No Action Alternative might result in slightly less desirable conditions adjacent to parcels zoned for commercial and residential development relative to the other alternatives, but these parcels would be likely to be developed regardless due to the high property values and quality of life present in the Point Reyes region, as well as the overall attractiveness and scenic value of the area regardless of restoration.

Consultation and Coordination

Public Scoping and Additional Information Gathering Efforts

Extensive efforts have been made by the Park Service and CSLC to involve the interested and affected public through a series of meetings, mailings, and workshops. A more detailed description of public scoping efforts can be found in Chapter 5. Public scoping was initiated under NEPA on September 23, 2002, with publishing of a Notice of Intent (NOI) to prepare an EIS in the Federal Register (Volume 67, No. 184). This notice was sent to 45 adjacent landowners to the Project Area, 163 persons and organizations on a public review request list maintained by the Seashore, more than 100 newspapers and other media outlets, and the Governor's Office of Planning and Research State Clearinghouse for distribution to relevant state agencies (SCH# 2002114002). Following agreement by CSLC to act as the lead CEQA agency, a Notice of Preparation (NOP) for preparation of a joint EIS/EIR was prepared by CSLC, the lead CEQA agency, and distributed to the State Clearinghouse. The public scoping period closed on June 30, 2003.

Public comments were heard at the October 19, 2002, Advisory Commission meeting at the Point Reyes Dance Palace where approximately 30 to 40 members of the public attended. The public comments focused on concerns and questions regarding public access, land use planning, hydrology, alternatives, and project planning. In addition to comments received at the public meeting, approximately 86 individuals or private organizations mailed, faxed, or emailed comments regarding the proposed project. After scoping closed, a staff report was prepared summarizing comments received during initial scoping, which was posted on the Seashore's web page.

Following scoping, the Park Service and CSLC held a series of internal workshops designed to prioritize restoration objectives based on a number of factors, including mitigation requirements, project Purpose, project Goals, and concerns raised by the public and agencies during scoping. The Park Service staff began working with its hydrologic consultants, KHE, to develop preliminary restoration and public access concepts.

After a series of internal meetings, the Park Service and CSLC initiated a series of alternative workshops to present preliminary restoration and public access concepts. First, the agencies met with representatives of local and regulatory agencies in February 2004. They then met with adjacent landowners in March 2004. A public workshop held on June 22, 2004, at the Point Reyes National Seashore (Seashore) Red Barn at 6:00 p.m. The meeting was well attended with 114 people present. Following the meeting, the public had a 30-day period ending July 23, 2004, in which to submit comments to the Park Service on the restoration concepts and scope of the proposed DEIS/EIR. During this period, the Park Service received more than 100 letters or petitions, phone calls, and requests for meetings. The Park Service met with three groups

of West Marin residents that specifically requested meetings because of concerns regarding land use issues, development, and character of the community or the potential for using the historic railroad grade for public access. As with the initial comment, most of the comments received during the public workshop and the subsequent scoping period concerned public access. A Park Service report summarized comments received during this informal scoping period and was posted on the Seashore's web page. A separate meeting was also held with local technical experts in the field of wetland restoration in September 2004.

In response to the considerable public scrutiny of the public access portion of the Project, the Park Service contracted for further technical evaluation of public access. As part of this effort, several meetings were conducted in March 2005 with adjacent residents during preparation of this document to better define potential technical feasibility and land use issues. In addition, a meeting for the general public was held on April 11, 2005, at the Red Barn at the Seashore. At this meeting, the consultants, LandPeople, discussed the potential trail alignments and some of the preliminary findings regarding technical feasibility and land uses. Approximately 40-50 people attended this meeting.

Value Analysis

Following conceptual approval by the Park Service's Development Advisory Board, received in June 2005, the Park Service held a Value Analysis process in August 2005, which enabled the Seashore and CSLC to determine whether it had developed a reasonable range of alternatives that meet the Park Service mission, as well as the Project's purpose and objectives. Value Analysis attendees included a broad range of technical experts from both within the Seashore and the GGNRA, as well as from other parks and agencies, including CSLC, Marin County Department of Public Works, and the Gulf of the Farallones National Marine Sanctuary. Comments during the Value Analysis process were again used to further refine alternatives. The Park Service presented these refined alternatives to the Park Service's Development Advisory Board and received pre-design approval in November 2005.

Agency Involvement and Scoping

Agency scoping was conducted throughout the project planning process to ensure that agencies became familiar with the proposed project and thereby ensure that the Seashore and CSLC had ample opportunities to learn of any relevant issues or concerns early in the planning process when information could be easily incorporated into information gathering efforts or into the alternative development process. For this reason, the Park Service and CSLC made several efforts to meet with agencies for the purpose of disseminating and gathering information.

Regulatory scoping meetings were conducted on November 6, 2002 and November 8, 2002. Attending these meetings, in addition to Park Service and CSLC staff and technical consultants, were representatives from:

- Regional Water Quality Control Board
- US Army Corps of Engineers
- National Marine Fisheries Service
- California Department of Transportation
- North Marin Water District
- California Department of Fish and Game
- Marin County Department of Public Works
- Marin County Parks and Open Space
- Marin County Parks
- U.S. Geological Survey- Biological Resources Division
- US Fish and Wildlife Service
- Gulf of the Farallones National Marine Sanctuary
- California Coastal Commission

On February 26, 2004, the Park Service and CSLC convened a second meeting with regulatory as one of the initial alternative workshops to provide information and gather feedback on the preliminary restoration and public access concepts. Representatives from regulatory and public agencies at this meeting, in addition to Park Service staff and technical consultants, included:

- Regional Water Quality Control Board
- Marin County Parks
- North Marin Water District
- Marin Resource Conservation District
- US Army Corps of Engineers
- Marin County Department of Public Works
- California Department of Transportation